

NOVEMBER 1993, VOLUME 1, NUMBER 8

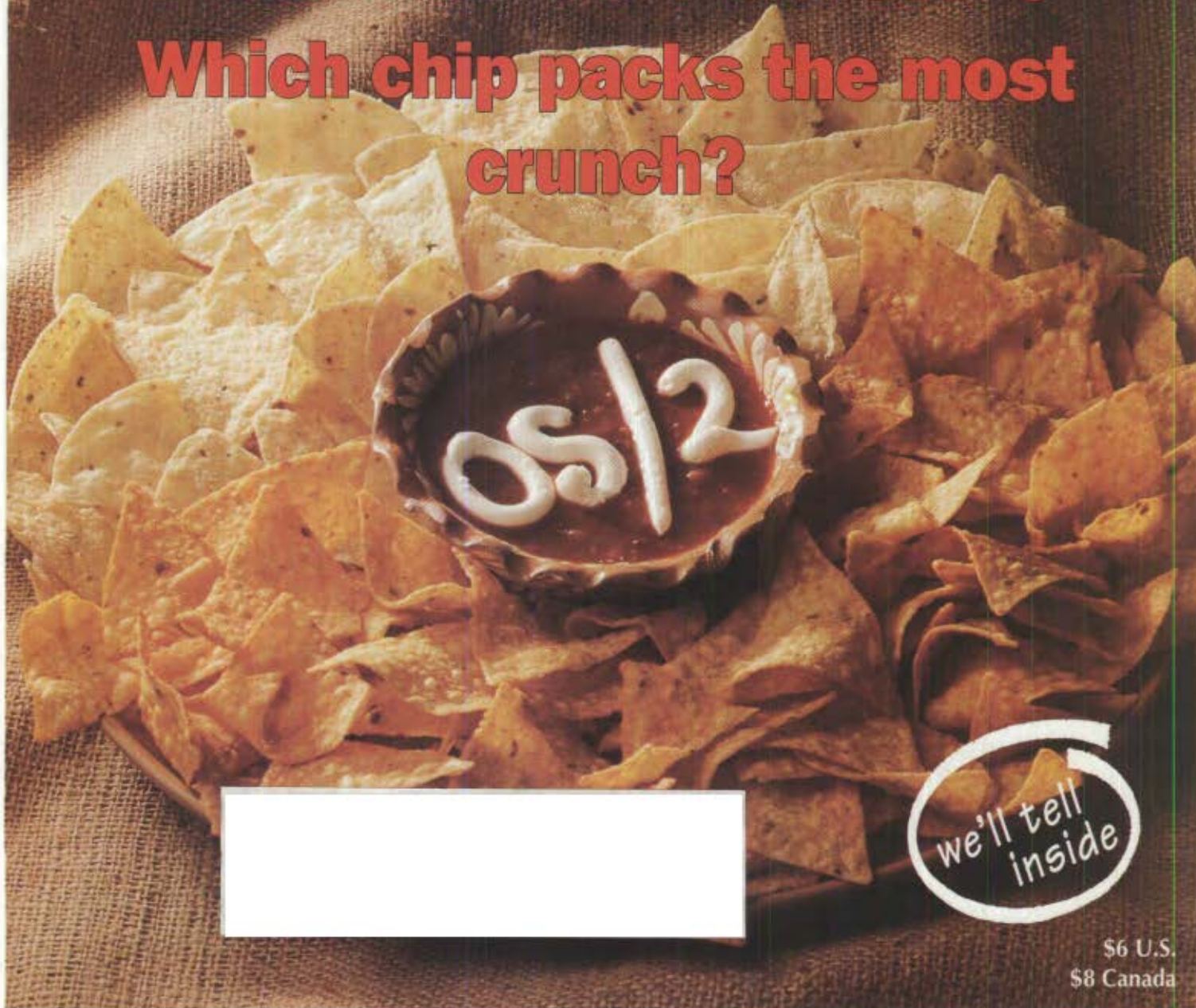
**FIRST ANNIVERSARY  
ISSUE**



PROFESSIONAL

# **Pentium vs PowerPC**

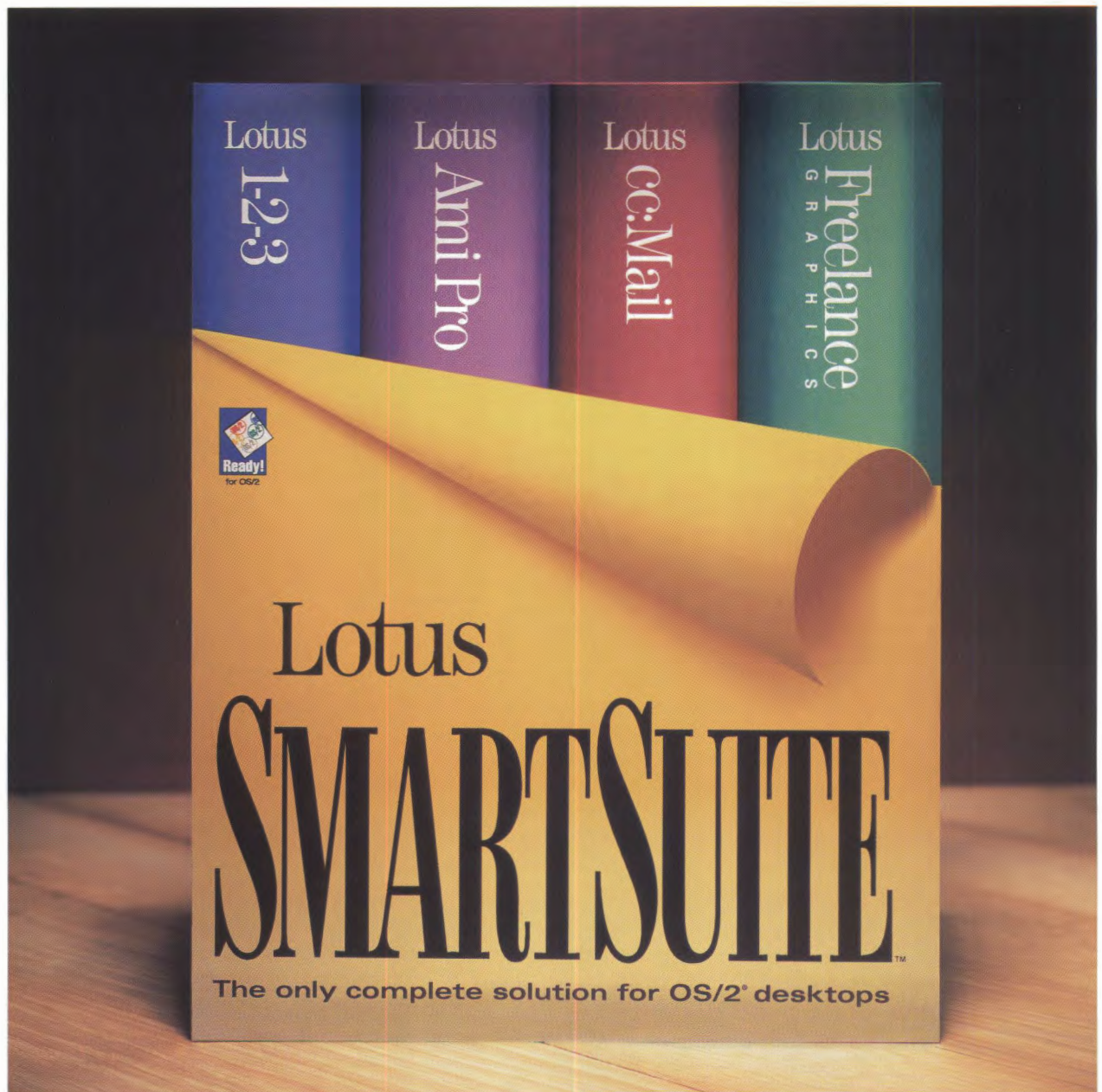
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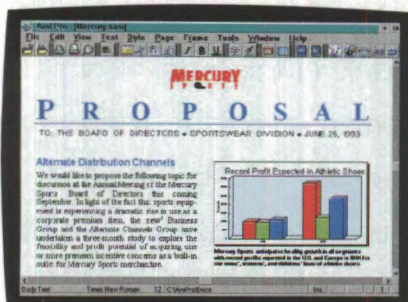


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Circle #74

November 1993 OS/2 Professional 1



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# E · E · K

OCTOBER 11, 1993 VOLUME 1 NUMBER 2 PAGE 1  
O · S · 2 · W · E · E · K  
OS/2 NEWS AND DEVELOPMENTS FROM THE EDITORS OF OS/2 PROFESSIONAL

## IBM plans Feringi raid

IBM will ratchet up its marketing assault on the Windows crowd in a big way with a secret new OS/2 product code-named Feringi (for the inescapable commercial raiders seen on Star Trek). The package will not be a mere front-end GUI, but a fully functioning OS/2 that will be virtually indistinguishable from the 2.1 packages installed by OS/2 users, reliable sources told OS/2 Week.

The as yet untitled product is designed to install easily on top of DOS and Windows as an upgrade to Windows 3.1. It will allow current Windows users to readily adopt the OS/2 operating system without giving up their existing configurations. Ironically, Feringi will still require between 15 and 17 diskettes. At press time, the number is not final.

IBM has not finalized a price for the product, but \$49.95 is being actively considered. Feringi is still in beta, but Big Blue is rushing the product to be ready for a Comdex announcement.

## CA readies OS/2 apps

Computer Associates, the Ithaca, New York software powerhouse, plans to ship by Nov. 5th the next two sources in its growing suite of OS/2 applications, according to sources at the company. CA-Super Project, an applications development tool, and CA-Super Project, an applications management tool, are now in the final stages of development. What the company calls "final candidate" status. Production is scheduled to take place during late October. The first three OS/2 applications CA shipped were CA-Compete, CA-Textor and CA-Simply Accounting. Further announcements are expected.

## DCF/2 suspends shipping, await HPFS fixes

Proportional Software has paused in its shipments of DCF/2 version 1.1 while awaiting fixes in the OS/2 HPFS file system, according to company co-owner Sandi Edwick. Edwick told OS/2 Week that without the fixes, DCF/2's performance "is far too slow."

DCF/2 creates a "container" file that takes a drive letter and compresses and decompresses on-the-fly.

## Waiting for Lou

The most sought-after person in the business world may well be IBM's CEO, Louis Gerstner. Dozens of requests for speeches, interviews, and public and private appearances rain down on his office daily. From the thousands of requests he receives each month, Gerstner accepts only one or two, leaving the other hopeful requestors disappointed.

It's become a major relations job for the Gerstner staff who must deftly decline the many invitations. Not a few of the hopefuls—both inside and outside IBM—can't understand why Gerstner won't appear or meet, especially when the inviting groups represent major business segments. One Gerstner source close to his appointment book told OS/2 Week: "He's just too busy running the company."



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Take a closer look at some Adaptive Technology options—accommodating disabled workers is not as tough as you think.

BY JOSEPH J. LAZZARO

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BY JENNIFER DEJONG

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BY LINDA G. HAYES

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For those of you who can't find a ThinkPad, Panasonic has introduced a great line of notebooks.

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DOT EXE

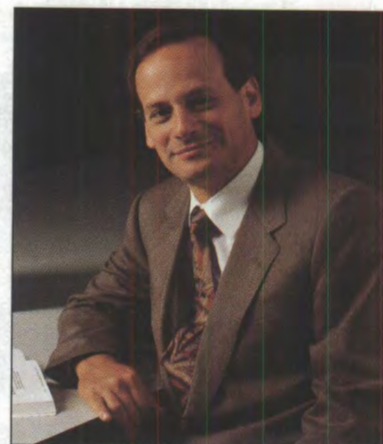
Rich Malloy explores two Visual REXX options: VisPro/REXX and VX-REXX.

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MARKETLINE

IBM plans Ferengi raid, a VESA Local Bus graphics accelerator, six new Lexmark printers and more.

COVER PHOTO: DEBI FOX, COVER DESIGN: ELIZABETH BLACK



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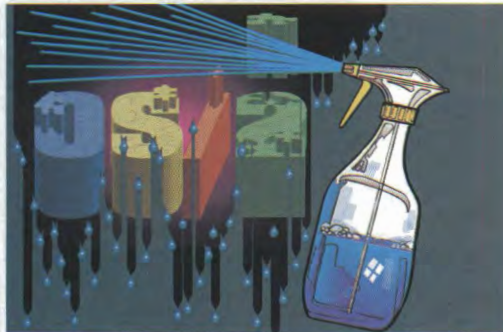


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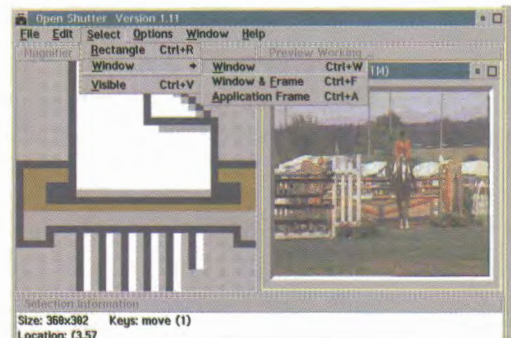
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BY DAVID MOSKOWITZ AND CHRISTOPHER WEIS

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What's the duality between DOS and OS/2? Find out how to work with both systems.  
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# A Great Beginning

**T**hey were dancing. That's the image I walked away with from the OS/2 Professional Interchange in Palm Springs. Our closing night party, "The Streets of California," saw the lawn of the Marriott Desert Springs Resort hopping with excitement. Hundreds of people were rollicking, playing volleyball, basketball, croquet, or toss football... singing karaoke, dancing to "Pretty Woman" or "YMCA" or merely eating from the quarter-mile-long ethnic food buffets or building ice cream sundaes at the sweet shop. All of it was televised on a giant screen by roving cameramen provided by IBM's Toronto labs. What a party!

And what a year it has been. Our Interchange was more than just a gathering of the finest minds in OS/2, the presentation of our Awards, and a cause for celebration. It was also our first anniversary as a publication. And never did any of us think—back in those first hours a year ago—that we would be hosting such an event.

It has been an extraordinary roller-coaster of struggle and success from those first days last October when five people holding down day jobs started working nights and weekends to bring into being the 65,000 copies of the first issue of *OS/2 Professional*. Who would have dreamed that within eight months our circulation would grow to 200,000-plus, our staff would expand to two dozen full-timers and a dozen part-timers, we would kick off our own conference on BIX, we would broadcast a weekly fax newsletter, *OS/2 Week*, that our own Interchange would be hailed by attendees as the OS/2 event of the year, and that we would have so dramatic an impact on OS/2? For that matter, who knew for a certainty that OS/2 would be posed to eclipse NT and grow into a multimillion-user operating system?

The support we have rallied from within the industry and our reader base is unprecedented. By now, in late October, we have counted more than 42,000 responses to our September issue request that readers send in signed subscription reconfirmations. We expect an equal number to respond to our October request. Our advertisers report that your enthusiastic response to their advertising outperform monthlies five times our size. At Palm Springs, IBM's John Soyring hailed our magazine as "one of the fastest growing magazines in the world." The success has been startling, but never taken for granted.

That's why we are moving to a more intense level of editorial coverage at *OS/2 Professional*. Our tough team of reviewers, reporters, and writers is covering OS/2 like no one has ever covered it before. Ironically, the vehicle that helps energize that effort is our fax newsletter, *OS/2 Week*. *OS/2 Week's* mission is to scoop *OS/2 Professional* with up-to-the-minute news about the OS/2 world. For those of us who come from the hard news world, it's a welcome weekly test of enterprise journalism. *OS/2 Week* separates the vapor from the solids, and extracts information with all the drive of a major metro daily. The result is a monthly magazine and a weekly intelligence report that have become the world's most informed sources on OS/2.

For us, it's also important to be the world's most fiercely independent source for OS/2. We're going to stand up to IBM, Microsoft, and our biggest advertisers with honest reviews, incisive reporting, and tough insights. The price ain't cheap. In an issue of *OS/2 Week* several weeks ago, and in this issue of *OS/2 Professional*, we broke a story that prompted a threat of retaliation from IBM. We stood up to it, and the threat vanished.

On several occasions, our on-target reviews of software have led advertisers to make subtle—and sometimes not-so-subtle—threats against our advertising budget. There was, for example, a senior executive who confronted our editors at Spring Comdex and threatened to withhold advertising in response to a passing comment our reviewer had made while evaluating a competitive product. And the book publishing company that assured us they advertise in magazines only if reviews were positive and—submitted to them in advance. Just as I was writing this, a major advertiser called to subtly imply he would pull advertising because an OS/2 Professional Award was voted for his competitor. But in all these and other cases, we generally keep our advertising because we stuck to our guns and because we have, in OS/2 users, the most loyal readership in the business. To keep each of you, we make clear that we place our readers first, and second—and our advertisers third.

That's easier said than done. I actually sympathize with larger publications whose giant advertising allotments dwarf ours and who have millions of dollars at stake. Who in their right mind would jeopardize that much money over a review or an analysis



## PUBLISHER'S MEMO

piece? Ironically, the reading public seems to sense exactly what's at play, and they support us for our stance.

That's why I am launching a new drive to preserve our independence. We are moving to paid subscriptions forthwith. Within our 200,000 circulation, approximately 180,000 readers are "controlled," with the remainder split between newsstands and a comparatively small number of paid subscribers. That means the magazine's income comes almost entirely from advertising. Every one of those full page ads is important to us. And it takes more than a little stamina to stand up to the pressure.

We are now asking our readers to voluntarily convert their free subscriptions to paid—and in so doing to help guarantee our independence in a world where money talks, and small independent publishing is virtually unknown and often walks. We'll be doing it readership segment by segment. When you have the opportunity, we ask you voluntarily to sign up for a paid subscription. You will find a subscription coupon on page 32. If our first year was the year of growth as the world's largest mass circulation OS/2 publication, our second year will focus on fortifying our publication to sustain the very attributes that have made our magazine so popular within the OS/2 community.

In that vein, we hope to proliferate the best and brightest about OS/2 and leave behind some of traits and trends that emerged when the operating system was embattled and struggling for acceptance. For example, we have led the abandonment of NT and Windows bashing. We are promoting responsible exchanges on the bulletin boards with os2.pro, our own BIX conference. It's already jammed with the latest insights and information on emerging and existing products and trends. There's a point here. OS/2 is headed for broad acceptance across the spectrum of computing, from the corporate world right down to the individual DOS user in search of greater productivity. Many of these companies and people have no stake in the OS war—all they want is a more productive and reliable operating system. OS/2 needs to speak the part and dress the part, and credibly promote its strengths. The MIS of some Fortune 500 company ready to standardize on OS/2 will be convinced by facts and performance, not slogans and defensive attitudes—whether on the boards or in the boardrooms.

I've done enough preaching. As I look back on a year of success, I need to do some thanking. Ironically, my first thanks goes

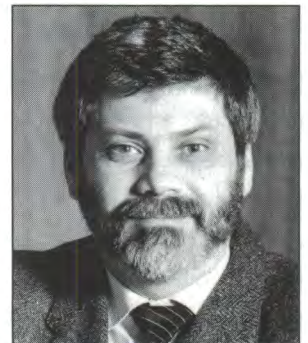
to several people at IBM who had the foresight and sense to support an independent-minded publication and to often also give it a double dose of criticism. That includes: Ted first, and then Bill, John, Lois, Gail, Melissa, Dave, Dave, Verna, Paul, Peter, Joanne, Kevin, and Francis, and many more. I also thank our friends at WordPerfect including Rich, John, and Troy; our friends at Computer Associates including Jay, Gary, and Laura; our friends at Lotus including Jim, Georganne, and Greg; and all the small and large advertisers who have invested their trust and resources.

But the greatest thanks goes to the small staff at *OS/2 Professional* who have labored through many nights and through many demands to make us a success. That's Catherine, Terry, Liz H., Alan, Annie, Wayne, Steve, Chris and Chris, Alexa, Jodi, Kelly and Frank. And to our special group of contributors and outside support team: Will Zachmann, Rich Malloy, John Dvorak, Arlene Williams, Karen Thomas, Martina Delude, Brendan Connors, and Dan Willard.

To the initial six: I salute you from the bottom of my heart. A year ago I divided a \$100 bill into equal pieces. It's time to collect. Here I mean: Editor Brad Kliever who (make no mistake about it) invented the magazine; Advertising Manager Rich Dubin, who has been such a buddy and such a producer, and who is being promoted next month to advertising director (he'll be reading it for the first time in this column); Assistant Publisher Margaret Dutcher who has held it all together; and our picture-perfect graphics team, Assistant Art Director Susan Levine, who wields her own brand of creative lightning, and our Art Director, my wife Elizabeth, who is responsible for all those beautiful covers and making sure impossible production deadlines are somehow met. Imagine, just as the OS/2 lifestyle and workstyle, with its multitasking and added productivity, gave me all that extra time to relax, Elizabeth allowed this magazine to steal it all back. I promise here publicly, we'll take a weekend soon.

See you all at Comdex.

*Edwin Black*





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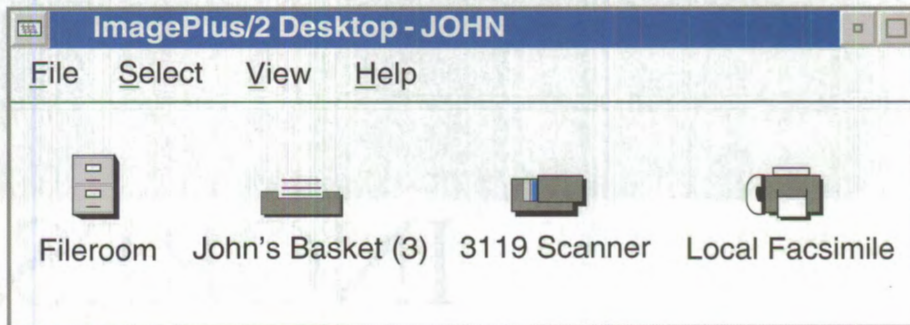
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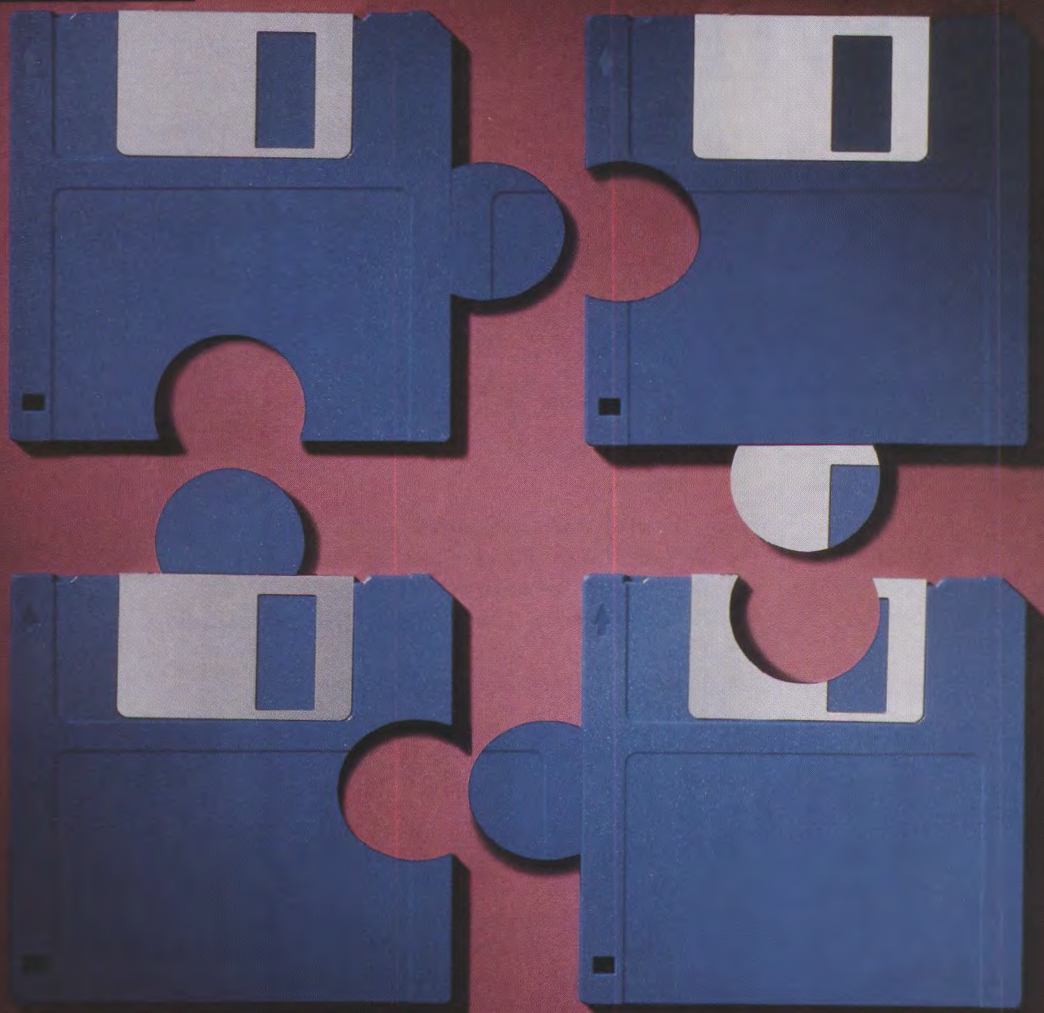
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**Administrative, Editorial & Production Offices:** Edwin Black, Publisher and Editor-in-Chief, Alan S. Kay, Executive Editor, Margaret M. Dutcher, Assistant Publisher, 172 Rollins Ave., Rockville, MD 20852, Phone: (301) 770-3333, FAX: (301) 770-7062.

**Editor's Office:** Bradley D. Klierer, Editor, 4604 Chicago Ave., So., Minneapolis, MN 55407, Phone: (612) 823-2657, FAX: (612) 823-7945, MCI Mail: 470-2447.

**Advertising Sales:** Richard B. Dubin, Advertising Sales Director, Pinnacle Place, Suite 205, Albany, NY 12203, Phone: (518) 489-4034, FAX: (518) 489-4045.

Kelly A. Lindner, Advertising Representative, 172 Rollins Ave., Rockville, MD 20852, Phone: (301) 770-3333, FAX: (301) 770-7062.



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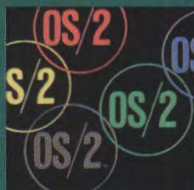
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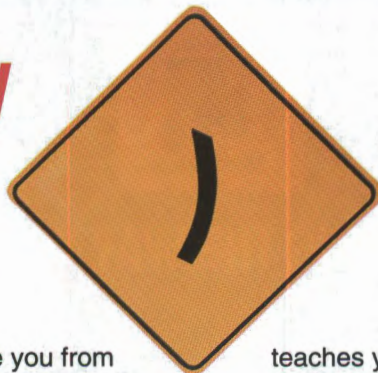
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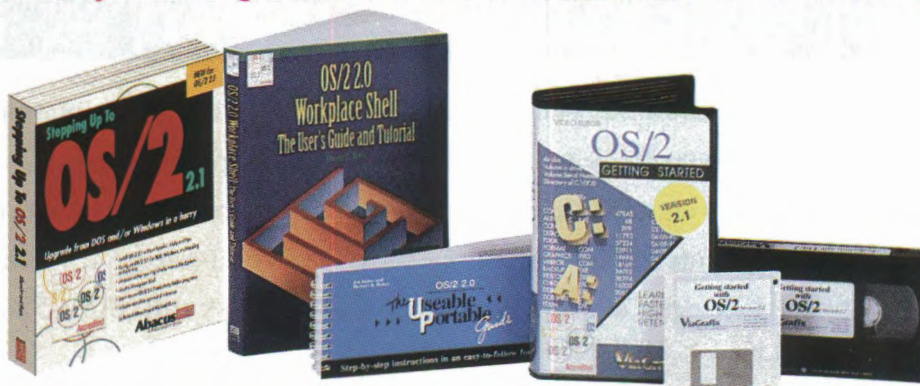
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*Comments, criticisms, and observations*

## Thanks

Thank you for providing an extremely informative and helpful magazine for the best operating system on the market today. I have enjoyed reading the articles and learning much about how to use OS/2. I have OS/2 2.0 and have just upgraded to 2.1 on my home system. Your magazine provides me with insights on using the OS to its best advantages. I hope to see more articles in this realm as time goes by.

*David Jankowski  
West Carrollton, OH*

## Snaking around

I thoroughly enjoy reading *OS/2 Professional*, but I can't help wondering if I'm the only one who finds it irritating to have to keep flipping through the entire magazine just to read the Input column.

*Brian Foreman  
West Palm Beach, FL*

## Honesty is such a lonely word

I would like to extend my congratulations to Mr. Black and all others involved in publishing *OS/2 Professional*. It is so refreshing to see a magazine dedicated to the operating system of the next generation. I am an avid OS/2 supporter who rants and raves to all of his friends about how they need to be running OS/2. For the most part, everybody I know that has installed OS/2 has been very happy with the system's performance (especially with the release of version 2.1 with its broad-based OEM hardware support).

I believe kudos are due to the various authors of articles in *OS/2 Professional* for presenting readers with accurate, reliable information. In reading Mark Minasi and Michael Kogan's articles on OS/2 2.1 vs. NT [August], I was ecstatic that they managed to stay firmly rooted in reality when comparing the two operating systems. It is incredibly disheartening to pick up a copy of another trade journal and read articles written by "experts" in the computer

industry who seem capable of gathering accurate information about an operating system that has been available for more than a year, yet when the spotlight turns to Windows NT, the fledgling operating system which recently became available, these experts seem to find no faults! Keep up the good work. I am anxiously awaiting my next issue.

*Derek Berube  
Athens, GA*

## Price wars

I was pleased to see that my local computer store now carries *OS/2 Professional*. I do, however, have a minor gripe. I think \$6 is out of line with current computer magazine pricing when the mode cost is about \$2.95. I hope this only a short-run tactic to provide dealers with high margins. In the long run I think you need to reduce the price substantially to build readership.

*Ronald Jones  
Ohio State University*

*[Editor's note: You can have OS/2 Professional for a modest \$2.50 an issue. Just order a subscription for \$30 a year, saving \$42 off the cover price.]*

## Windows at work

I'd like to make a comment on the article entitled "Windows Unlatched" (July) on the benefits of using OS/2 2.1 with Windows applications. This is the kind of marketing that will allow the OS to survive, and even proliferate the market. The Windows crowd, in which I must reluctantly include myself (we're a Windows shop at work, a situation I am endeavoring to change), needs a better alternative to crash-prone Windows, and OS/2 2.1 is that alternative. I am a constant user of Windows applications every day, but I am by no means an extremely demanding user. However, even in my modesty I manage to crash my system at work on average of several times a week. In contrast, my OS/2 2.0 system at home has been running happily for months without a crash. If Windows users could under-

stand this benefit, the biggest possible market for OS/2 would be open.

*L. Scott Flowers  
Edmonton, Alberta*

## This is getting Borg-ing

Regarding your Special Report: The Borg Arrives (May). The illustrations on page 5 and page 26 are reversed left-to-right. The laser device was worn on Stewart's right side. Only your cover properly depicts this. Does this mean we can't tell left from right with OS/2? The familiar face shown on page 26 is that of Captain Piccard who was transformed into a Borg himself (notice the human skin tones, not the white like his captors). Not to mention he was later restored to his natural state. Following this is an OS/2 parallel: It implies that one might try OS/2 for a while, but one will go back to DOS/ Windows once free of your captivity.

I also feel that I should point out that the text reads: "The new version—code named BORG (referring to the all-powerful entity on *Star Trek: The Next Generation*)..." neglects to inform that the Borg were disarmed by a simple sleep directive and then destroyed. The Borg could easily be portrayed as a Galaxy race of Hitlers whose goal is to absorb all known technologies for personal benefit and leave those in their path obliterated or destroyed. I hope this isn't the image OS/2 is trying to portray?

*Walt Stoneburner  
MCI Mail*

## Wanted: more graphics

Just dropping a note. I love the magazine, but I have one note of criticism. I feel the software reviews should have more graphics of each program. While I may be alone in this feeling, it is hard for me to make a decision on a program using a GUI when I have nothing but words to base my decision on. I think it would help those companies whose software you are reviewing if there were a few graphics of the look of the desktop.

*Bill Cunneane  
MCI Mail*

*continued on page 23*



# THIS *or* THIS?

## DCF/2—DISK COMPRESSION FOR OS/2



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# BYTES & PIECES

*News and trivialities, important and obscure*

## King of the Hill

Here's a possibility guaranteed to do one of two things: capture your imagination, or totally gross you out. A new CD-ROM entitled "The Software Toolworks Presents ...Capitol Hill" allows a user to explore the possibility of being a member of the United States Congress. The software mixes first-person experience with interactive multimedia to guide the user through a political career that spans from freshman orientation to speaker of the house.

"Capitol Hill" is one of three titles in the first-person series from The Software Toolworks Inc. and Amazing Media Inc. of San Anselmo, California. The other "journeys" available on CD-ROM are the Ocean and the Space Shuttle. (415) 883-3000.

*Alan Kay*

## Nebulous NetWorld

In 1987, Novell presented the first NetWorld show, designed for database users. A year later, Novell licensed the name to trade show mogul Bruno Blenheim, who since then has been putting on successful NetWorld shows twice a year, alternating Boston and Dallas.

The Blenheim NetWorld era has now ended, though. The license agreement between Novell and Blenheim ran out on Oct. 14th, and Novell has relicensed the name to Ziff Davis' Interop group, which will host a new combined show entitled NetWorld + Interop in Las Vegas and Atlanta in 1994.

Blenheim, meanwhile,

retains the dates, locations, and theme of NetWorld, but has rechristened the event Networks Expo, the name it already uses for its European conferences.

So what happened between Novell and Blenheim? Novell isn't talking. And not only did it drop the license; the company is "waiting to see how it pans out" before signing up to be an exhibitor at the 1994 Blenheim Networks Expo.

How Novell's withdrawal will affect the numbers at Networks Expo in Boston in February remains unclear. Based on the minimal increase in Dallas attendees, however, NetWorld (under the Blenheim name) may have seen its day: 1993 drew 41,243 attendees and 500 exhibitors; 1992 produced 39,396 visitors and 395 exhibitors.

*Anne Longworth*

## Microsoft denies Word for OS/2

Developer sources at Microsoft have told *OS/2 Professional* that the company is indeed developing a 32-bit version of Word for OS/2 to be released next year; the work is supposedly underway in Building 16 at the Redmond Campus, several Microsoft sources said. But senior Microsoft officials immediately denied the claim in the strongest terms.

According to Chris Peters, general manager of Microsoft's Word Business Unit, "It ain't true. And there is no wiggle room."

Peters says that some people may have mistaken work on a maintenance release of

PM Word early this year, from 1.1a to 1.1b, as beta work for OS/2. The work was done for a company in Holland. Peters said anyone who claimed they had a beta was "authorized to immediately send a copy to *OS/2 Professional*," adding, "No such beta exists."

Peters said the main reason Microsoft was not pursuing a native 32-bit Word version for OS/2 was, "OS/2 runs the Windows version so well, we can't see the incremental sales over the market we already sell."

*Edwin Black*

## IBM team ports NT

One of the busier IBM development teams these days is the group porting NT to the PowerPC. The original six person-team began work last February using office space provided by Microsoft at its Redmond campus and has already expanded to 20 people. Several weeks ago, the group moved off-site to an office in Kirkland called the Kirkland Programming Center. This weekend, the group is

moving to yet larger quarters, some 20,000 sq. feet, in anticipation of expanding the team to 60 people before year's end.

*Edwin Black*

## New color ThinkPad

Although IBM announced the ThinkPad 750 line in September, getting your hands on a 750C hasn't been easy. The machines are on constant back-order because of a limited manufacturing run.

The ThinkPad 750Cs, however, is the same as the 750C but with a "dual passive," rather than active, color matrix screen. When looking directly at the screen, users will discern no difference. It's only when viewing the screen at an angle that the picture on the Cs starts to get lost.

The functional difference between the 750C and 750Cs is relatively slight, but the price difference isn't. With a list price of \$3,890, the 750Cs could save the end user \$800. IBM insists it will be available in mid-November. ♦

*Anne Longworth*

## WORK-IN-PROGRESS • PART 2

OS/2 is a work-in-progress. We've been asking readers to tell us what changes or new features should be included in the next version of the operating system.

This month's entries are drawn from *OS/2 Professional's* os2.pro conference on BIX:

- ▶ Fix the install program
- ▶ A tape back-up system
- ▶ Streamline the process of upgrading video drivers
- ▶ Built-in keyboard macros
- ▶ The ability to accelerate the keyboard
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## OS/2's Other Secret Weapon: the Workplace Shell

Unlike the Mach 3 microkernel, which is still relatively unknown, OS/2's other secret weapon is readily visible to anyone who's so much as seen a demonstration of OS/2, let alone used it.

The Workplace Shell is OS/2's secret weapon not because it is concealed from view but because its full power remains hidden even though the WPS itself is in plain sight. It is so secret that a fair number of industry analysts and writers in the trade press are still so foolish as to believe that the Workplace Shell is a problem for OS/2.

They are dead wrong.

Admittedly, long-time Windows users are sometimes a bit uncomfortable at first with the Workplace Shell. However, people who'd lived in a cave with a five-foot ceiling would probably be uncomfortable, at first, with being led out into the open air.

In fact, former Windows "power users" form a major contingent among the early adopters of OS/2. Now that OS/2 2.1 finally delivers an operating system that runs Windows applications as well as Windows 3.1 does, and DOS applications better than Windows does, lots of Windows users are upgrading to OS/2.

Those who do are unlikely ever to return to the old Windows GUI, and for good reason. Compared to the OS/2 Workplace Shell, it is a clunky, old-fashioned, extremely limited interface. The WPS's features leave the Windows 3.0/3.1 interface—itsself little more than a shadow of the older Macintosh interface in the first place—way behind.

Microsoft, trying hard to maintain long-term control of the desktop operating system environment with "Windows Everywhere," recognizes this. That's why it is working so hard to make the future "Chicago" and "Cairo" the successors to DOS or the DOS/Windows 3.x combination, while repeatedly promising to deliver—"real soon now"—the object-oriented capabilities

available today with OS/2's Workplace Shell.

Aside from its resource requirements, one of Windows NT's most important limiting factors is its boring Windows 3.1-like interface. Just compare it to WPS or NextStep (or even the Apple desktop).

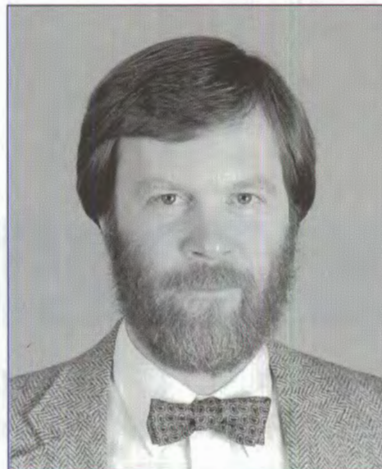
Microsoft officials have told everyone, of course, that they "preserved" the Windows 3.1 GUI in Windows NT for the sake of compatibility. There are, however, other reasons that are readily evident. Not the least of these is that to build a new GUI requires a lot of additional work.

NT was very late out the door in the first place, even with resource requirements that, in memory at least, nearly double what was originally promised. To incorporate a newer and more powerful GUI on top of NT would not only have made the product even later, but would undoubtedly have further increased its already demanding (for the desktop, anyway) memory, disk, and processor requirements as well.

OS/2 went through the necessary transition to a more powerful object-oriented GUI with the Workplace Shell nearly two years ago. Its GUI of the future is already in place.

Microsoft, however, must still navigate a difficult transitional passage from the old-fashioned File/Program Manager GUI to the more powerful object-oriented GUI that the prevailing wisdom associates with "Cairo." In fact, I suspect it may actually introduce the new GUI as part of what I've long called NT Lite and Microsoft calls Chicago (or Windows 4.0/DOS 7.0 or whatever).

To do so, however, will not be easy unless the Redmond developers limit the capabilities of the new GUI shell for all the flavors of Windows. There are three reasons why they must do so. First, existing users will have to adjust to the new GUI. Second, it will require huge amounts of new code. Third, to the ex-





## ZACHMANN'S VIEW

tent that it offers new capabilities, it will require new applications to exploit it.

These are, of course, exactly the same three obstacles initially faced by the OS/2 Workplace Shell. The crucial difference is that WPS has now been shipping for nearly two years. Lots of users are already accustomed to using it and more are becoming so. The fundamental code for WPS is already well tested and stable and is ready for further optimization. WPS-exploitative applications are now appearing from numerous vendors at an increasing pace. Cairo (or whatever Microsoft wants to call its newer and more powerful GUI) still has all that ahead of it.

Beyond that, however, the OS/2 Workplace Shell is much more than just the user interface for OS/2. It is the common interface that not only will span the range of IBM's microcomputer operating systems (OS/2, AIX, and Workplace OS) but will play a prominent role on the PowerPC and on OSF- and COSE-compliant Unix offerings from many other vendors as well.

But they'll have in common more than the user interface. These

operating systems will also share a common microkernel architecture based on Mach 3. The latter promises to unite these at the bottom much as the Workplace GUI unites them at the top.

The Mach 3 kernel and the WPS GUI together create an extremely powerful, robust, versatile foundation for a family of operating systems that will be able to span the entire range of systems, regardless of what type of processor provides their hardware basis.

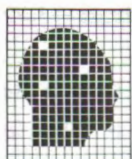
Kernel plus GUI together give IBM's operating system strategy an excellent chance to be as successful in the world of distributed, downsized systems as was the original OS for IBM mainframes in its day. To say that this will be a serious challenge to Microsoft's "Windows Everywhere" strategy is a considerable understatement. ♦

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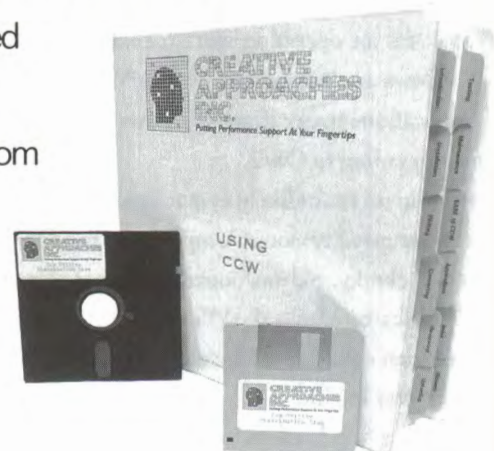
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## INPUT

*continued from page 17*

### Annulment, please

Blessing and Peace! Although I am still interested in continuing to receive your magazine, I became disheartened by the difficulties with OS/2 2.0 and the inability to resolve the "bugs" even with tech support. The final straw was being told that in order to receive the "maintenance" update, which corrected over 300 bugs, I would have to pay \$24.95. This resulted in my deleting OS/2 from my system (386-40 mhz, AMI chip, 8mb memory) and replacing it with DOS 6.0. Receiving the letter offering 2.1 for \$60 has not enticed me. I wrote to IBM Fulfillment about my dissatisfaction but have not received a reply. So I guess, at this point, OS/2, IBM, and I are separated. Nevertheless, continue to send the magazine since we haven't reached the divorce stage as yet. Love and Care in the Lord,  
*Rev. Frederick Pompei*

### Personal problems

I can save you some money. After my experiences with OS/2, you don't have to keep sending me your expensively printed magazine. I installed OS/2 the first time and it first ruined the partitioning of my hard disk, then aborted the installation for reasons I couldn't understand. I had to reformat my hard disk and reinstall DOS to get back control. The second time I tried to install it, it got hung up while trying to destroy my partitioning and aborted. But the egoistic parts of the programs were already installed and prevented me from getting back to DOS—it couldn't run in an OS/2 session.

The third time I tried I got all of it in but nothing worked. Clicking on the icons produced no action. I had to reformat the hard disk to get back control. Only I couldn't install DOS again because nothing was formatted when I tried. I have two hard disks and both

were unformatted by OS/2. DOS then offered to install itself on disks, which I accepted. I managed to soft reset the computer with the DOS 5 startup disk in drive A and got control again. I even used it to format both hard disks.

OS/2 may be a good operating system, but it seems to denigrate everything in the computer to get itself installed. I really don't want any part of it. I met a woman who programs in REXX so I do know some people can use it—it's just that I can't.

*Sam Wetmore  
Venice, Florida*

### Power PC

I was reading some newsgroups on Internet, and came across a new newsgroup devoted to the new PowerPC machines. Since this new system seems to be part of a long-range plan with IBM and OS/2, are you planing on

*continued on page 67*

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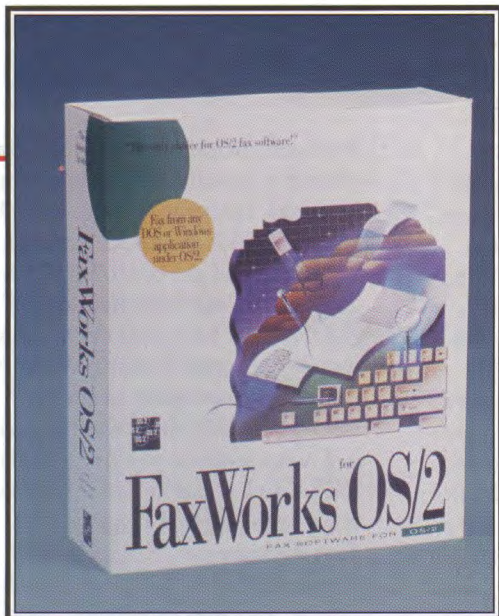


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## Q & A

*A straight-talk interview on topics of professional concern*

# Associating with RUSSELL ARTZT

Once upon a time, the name Computer Associates was known only to data center administrators. Today, that has changed: The 17-year-old CA has reshaped itself into a hard-charging multi-platform software company. Last year, CA made a commitment to a suite of OS/2 applications, several of which are now shipping.

Russell Artzt was one of CA's four co-founders, working virtually round the clock with Charles Wang to build the Islandia, Long Island firm. Today, he serves as the company's executive vice president for research and development. Speaking with Artzt on Sept. 30, *OS/2 Professional* Editor-in-Chief Edwin Black probed CA's involvement with OS/2. An edited transcript follows.

**Edwin Black:** It's been a long road since 1976, when Computer Associates was founded. You were one of the original four co-founders. Today CA is a nearly \$2 billion company with 7,000 employees worldwide. Compare your existence today with those original days.

**Russell Artzt:** In the old days, Edwin, when we started in '76, we all did everything. I was running development. I mounted the tapes. When I had to be an operator in the computer room, I was. More often than not, we would work through the night. We still have the same philosophy we started with in 1976. We believe our managers need to be hands-on, technical. They need to understand what's going on. That's why a lot of our development managers are "working managers" in that they not only manage a group of programmers, they are also very often involved in the actual coding—just as I used to be.

**So CA employs technocrats who can manage, not managers who interface with technocrats.**

Correct. My feeling is that if you don't know how to





## Q & A

do development yourself, you're not going to be successful as a manager, because you don't know what it takes.

**In those early days, you started out by swapping development for time on other peoples' computers, correct?**

Right. In the early days, [CEO] Charles [Wang] would make deals with other companies: "Give us x amount of free computer time and we'll give you the product for free."

**Any companies we would recognize today?**

Some. We worked with companies like American Can, Informatics,....

**Are these currently now your customers, actually paying for the software?**

Yes, they are. And we can afford our own computers now.

**Working through the night—how did that affect your family life?**

Charles and I would work the weekends and through many a

night, our wives with us in the computer room. Basically, we had to get the work done. If you don't get the work done, you don't eat.

**Has it gotten any easier? Are you able to spend more time with your wife now than 17 years ago?**

I would say yes. It's become easier in that sense. But the same pressure is there. The last time I worked through the night was a few months ago, getting out CA-Unicenter for HP-UX. Most importantly, it's just as much fun as in the old days—and that's the main thing to me.

**Back then, when you were going hand-to-mouth, did you ever envision you would be a billion dollar software vendor?**

We always wanted to be the biggest and best software company. I personally never thought in terms of numbers, or "would we hit a billion." But we did believe that if we created the best software we knew how, things would follow. As it turned out, we knew what we were doing. And we were able to make acquisitions that successfully fit into our existing technology.

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## Q & A

### How?

Over the years, we built an architecture we call CA90s, the foundation for all of our software. CA90s gives developers a guideline for developing software products. We employ a common set of tools that we use over and over again in building our software products. When we acquire other companies or other software products, the first thing we do is integrate these products into our architecture and make use of the common tools.

**You've seen a lot of operating systems come and go in the last 20 years. Now you're energetically venturing into OS/2. Were you a believer from the outset?**

Yes, I knew about it from day one, years ago, and was always excited about it.

**But how long did it take CA to actually develop an app for OS/2?**

In the release 1 days, we were pretty excited, but frankly, the product was buggy and we weren't able to use it. We started our

OS/2 product development last year after 2.0 was released and OS/2 became stable.

### How easy a decision was it?

There was a meeting with Charles, and a consensus was reached. A lot of our large clients were telling us that OS/2 is important to them. Based on that, we decided to go for it.

### How many large clients?

I had personally heard from hundreds of corporate clients attending our conferences. Our larger database and application development clients made it clear that OS/2 was very important to them. And I certainly noticed a trend among some of IBM's larger MVS clients, especially in the area of application development.

**The first three applications to ship for OS/2 were CA-Compete, CA-Textor, and CA-Simply Accounting. Where are CA-Realizer and CA-SuperProject?**

They're in the final stages of production. We're looking to

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## Q & A

actually ship them by Nov. 5th.

**So by the time our readers at Comdex see this interview, there should be boxes of CA-Realizer and CA-SuperProject available.**

There should be.

**CA-Unicenter for OS/2, on the other hand, is just going into its initial beta test. How was your success with CA-Unicenter on other platforms?**

Very good. Our first delivery was CA-Unicenter on Hewlett Packard's 9000/800 machines running HP-UX. It exceeded our expectations. In fact HP is bundling it with its series 800 machines. Whenever a new HP machine ships, it includes a free 120-day trial for CA-Unicenter.

**When will CA-Unicenter finally make it to the OS/2 platform?**

We see a ship time frame of January.

**To what extent do the Windows and OS/2 versions of these applications differ structurally?**

Each is optimized internally for the environment it was designed for. Sometimes there are minor user interface differences which come from the differences between Windows and OS/2 PM. Otherwise it is the same application. There was quite a bit of development effort required to get the applications to run on OS/2 Presentation Manager.

**Was this a ground-up situation or a port?**

All these products are ports from Windows to full 32-bit OS/2 implementation.

**Will they offer extensive Workplace Shell features?**

I wouldn't say the initial versions exploit it as much as we want. It will be more so in subsequent releases. For right now, we have ported our Windows applications over into a pure OS/2 Presentation Manager environment and still we have exploited some of the high frequency functions. For example, printing is multi-threaded in the background.

**I assume you used Micrografx Mirrors throughout?**

No. We wrote our own tools. Most of our code is written in C, so a lot of it was just a matter of taking the Windows dialogues and the C code, and then recompiling it under IBM's OS/2 C compiler. We have a utility tool to generate OS/2 PM code and

that helped us. But in a lot of cases, it was a matter of converting Windows dialogue into PM dialogue. So, you see, there was a lot of what we would call "grunt work" involved.

**And when we see this CA-Unicenter box, what version will it sport?**

The CA-Unicenter box will be 1.0.

**That will be the first step. What version will further exploit the Workplace Shell, and what's the time frame?**

2.0. But we haven't announced a date.

**So you can't commit to 1994.**

Until we finish the planning process, I'd rather not.

**Moving on to CA-Realizer, is it going to be the counterpoint to Visual Basic?**

Yes. CA-Realizer is our Visual Basic competitor. As you know, Visual Basic only runs on Windows. CA-Realizer runs on both Windows and OS/2 now. It's a very powerful product, has a lot of tools, and a lot of capabilities Visual Basic doesn't have. The language is very robust, the visual forms environment called FormDev is beautiful, just tremendous.

Also, CA-Realizer comes with a lot of CA-written custom controls. When you design your form, you can design in your custom controls: We've written our own container control, our own notebook control, for example.

**What's in the future for CA in OS/2?**

Two very big areas for us are application development and systems management. We think CA-Realizer is going to be a big hit on Windows and OS/2. Also in application development, we just came out with a new GUI product called CA-Realia II Workbench, a complete COBOL development environment for off-loading maintenance and downsizing mainframe applications, that runs under Windows. And we're in the process of moving it over into OS/2 Presentation Manager. Actually, all of our application development products will be moving over there. We have for instance CA-Ret, the Windows report writer, bundled with CA-Realizer 2.0.

**And CA-Unicenter?**

OS/2 is critical for CA-Unicenter. We're also looking at OS/2 as being strategic to CA-Unicenter as a client as well as a server. We are going to be using it as a client workstation in the future.



## Q & A

**So in all, if someone were talking to you on Jan. 1, 1994, how many OS/2 products would they see at Computer Associates?**

Several new ones, keeping in mind that there are also client applications.

**Currently, approximately 75 percent of CA's revenue is from mainframes, and 10 percent from PC software. But by the turn of the century, that will all change.**

Yes. We all feel that the numbers are going to be pretty much split over a period of time. Mainframes will be maybe 25 percent, with the desktop being 25 percent with DOS and OS/2, Unix being 25 percent and then another 25 percent of other platforms.

**Do you feel that there is going to be one OS that will dominate the remainder of this century, or is it really going to be split between a number of OSs?**

It will be split among a number of operating system vendors. Just look at the mainframe. We started with one vendor, IBM. Now, you're talking about three major operating systems, MVS, VM and VSE. So I definitely see multiple operating system vendors. Some of the smaller players will die out.

**When will we see CA ship boxes of NT apps?**

We're definitely working on our application development products for NT, and CA-Unicenter NT, but we haven't announced a delivery date.

**So that means 1994 will see CA-Unicenter for NT?**

Yes.

**And which do you believe will be the most popular product: CA-Unicenter for OS/2 or CA-Unicenter for NT?**

Hard to say. It really depends on how successful IBM is with OS/2 as opposed to how successful Microsoft is going to be with NT.

**Well, would you bet the farm on IBM's marketing?**

I think it's pretty good. A lot of false starts, yes. But now, I see a serious, focused effort to get OS/2 out there. I've seen a big difference lately.

**And are you confident that OS/2 is going to be a leading profit center for Computer Associates in the coming years?**

Yes I am.

**Thank you, Mr. Artzt. ♦**

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# BATTLE OF

## Choosing Sides in

PowerPC is emerging as the RISC  
on the microprocessor market.  
million CPUs

BY MICHAEL

**T**he platform wars are the battles being waged in the computer industry for the desktops of the business world. The hostilities, involving as they do the future profitability of large manufacturing companies and a highly lucrative commodity, are intense: As businesses downsize and reengineer their information systems in the 1990s, they are making crucial decisions about platforms that have far-reaching implications.

Since the advent of general purpose microprocessors in the 1970s, technology has evolved through advances in processor architecture such as *Reduced Instruction Set Computing* (RISC) technology, and by exploiting better manufacturing techniques. At the forefront of the microprocessor battles are two chips that have benefited from these technological advances: Intel's Pentium processor and the PowerPC chip developed by IBM, Motorola, and Apple. These processors are set to compete for the high-end PC market and the low- to mid-range workstation market.

As the critical link between the hardware and the applications, operating systems are a key factor in the wars. As microprocessor-based operating system technology has advanced from simplistic DOS/Windows to advanced multitasking environments like OS/2 2.x, Windows NT, PowerOpen, and Workplace OS, it has defined the terrain over which the chip battles will rage.

### RISC History

Understanding RISC technology and its origins is important to any comparison of RISC and x86 processors.

As the personal computer industry grew over the late 1970s



# THE CHIPS

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and 1980s, computer architects in academia and industrial research laboratories observed that processor cycle times were advancing faster than memory (RAM) access times and noted that this speed mismatch inevitably would result in performance bottlenecks. Also, analysis of instruction streams revealed that many complex instructions in a processor's instruction set were used only infrequently by compilers, yet considerable silicon resources were dedicated to the support of these instructions.

In their attempts to overcome these bottlenecks, researchers found that the instruction set architecture of a processor has far-reaching effects on the performance of programs. By using a simple instruction set rather than a complex instruction set (CISC), processor architects were free to evolve other techniques, such as *pipelining*, *register windows*, *caches*, and *superscalar architecture*, to increase performance. The term RISC was coined to refer to processors that conform to all or most of these evolutionary design tenets.

As the technology matured, RISC processors entered the market as the CPUs for workstations—desktop computers positioned above PCs and below mini-computers in price and performance. Configurations for RISC systems ranged from 16MB RAM and 500MB of disk space at the entry level on up. In the 1980s, RISC workstations became attractive for large applications that needed more power than was available on PCs, or for large applications that were not scalable



## SPECIAL REPORT

to the segmented 16-bit x86 architecture prevalent in the PC market.

Although most experts agree that RISC architectures are more suited to general-purpose computing than the x86 architecture, RISC applications appear primarily in niche applications such as visualization, modeling, and floating-point-intensive tasks. Having come of age in the shadow of the exploding PC market of the 1980s, RISC technology continues to face an uphill battle against CISC's firmly established foothold.

However, the transition from 16-bit to 32-bit software in the 1990s provides an opportunity for greater exploitation of RISC technology in the computer industry.

### Battle of the Microprocessors

In the near term, the Intel Pentium processor will be competing primarily with the PowerPC in the high-end PC and low- to mid-range workstation segments of the market. While there are other commercially viable RISC processors, such as the DEC Alpha, Sun SPARC, HP PA-RISC, and MIPS R4000 series, the PowerPC has the best chance for broad commercial acceptance for several reasons.

First, the PowerPC is backed by two of the largest and most capable semiconductor manufacturers in the world, IBM and Motorola. Second, due to the advanced manufacturing techniques of these two companies, PowerPC chips have a significantly lower cost and price/performance ratio than competing RISC processors, allowing aggressive pricing of PowerPC chips. Third, this chip will be the heart of future Apple computers and IBM workstations, creating an immediate opportunity to sell significant volumes of PowerPC chips. And finally, these volumes will allow the IBM/Motorola/Apple troika to leverage PowerPC products into the market and evolve distribution and support channels competitive with those of the PC market.

### Technical Overview

Although classified as a CISC processor, the Pentium processor incorporates all of the characteristics of RISC-style design except for the simple instruction set. Internally, the Pentium processor is actually a RISC processor core that supports the x86 instruction set.

The PowerPC architecture is the culmination of 20 years of experience developing RISC technology at IBM, and the

**TABLE 1. PROCESSOR COMPARISON**

	<i>Pentium Processor</i>	<i>PowerPC 601</i>
Availability .....	Now .....	Now .....
Price (1000s) .....	<\$900 <sup>1</sup> .....	\$450 <sup>2</sup> .....
Clock Rate .....	60, 66MHz .....	50, 66MHz .....
# of Transistors .....	3.1 Million .....	2.8 Million .....
Fabrication Process .....	3-layer metal BiCMOS .....	4-layer metal CMOS .....
Process Size .....	0.8 micron .....	0.65 micron .....
Die Size .....	294 mm <sup>2</sup> .....	121 mm <sup>2</sup> .....
Instruction Set .....	80486+ .....	PowerPC .....
Cache .....	8KB Code, 8KB Data .....	32KB Unified .....
Cache Coherency .....	MESI <sup>3</sup> .....	MESI .....
Superscalar Issue .....	2 integers per cycle or 2 floating point per cycle .....	2 integers plus 1 floating point per cycle .....
Superscalar Execution .....	2 integers per cycle or 2 floating point per cycle .....	1 integer plus 1 floating point per cycle .....
Branch Prediction .....	Dynamic .....	Static .....

<sup>1</sup>Source: Intel Marketing.

<sup>2</sup>Source: Motorola.

<sup>3</sup>Modified-Exclusive-Shared-Invalid, a standard protocol used to manage memory coherency in multiprocessor architectures.



## SPECIAL REPORT

PowerPC 601 is the first in a series of PowerPC microprocessors derived from IBM's RIOS single-chip (RSC) processor, which is used in RS/6000 workstations.

Although both chips have about 3 million transistors, the Pentium processor die, based on an 0.8 micron process, is significantly larger. The fabrications of the PowerPC use a smaller 0.65 micron process. A larger die size means fewer chips per wafer during production, lowering yields and raising costs. However, Intel has said that 0.6 micron fabrication of Pentium processors should begin during the fourth quarter of 1993, with availability in early 1994.

But architectural differences in various microprocessors, although important, are often overemphasized. Each processor implementation makes different tradeoffs among instruction set design, clock speed, pipeline depth, superscalar capabilities, cache design, cost/price, and compiler technology. Also, many of the elements classified as RISC are now appearing in CISC architectures like the Pentium processor, further blurring the line between the two. The only real difference between RISC and CISC is the actual instruction set architecture and its impact on performance.

While benchmarks do not necessarily indicate how a processor will perform running a specific application, they do provide a starting place for understanding the impact of different architectural characteristics. An important configuration parameter often overlooked in benchmarks is the size of the external cache. Since most benchmarks execute loops to generate their data sets, they are sensitive to external cache size. When considering price/performance, the cost of the static RAM used for the external cache should be factored into the total price. The SPECmark ratings in Figure 1 for the PowerPC utilize infinite external cache, while the x86 and Pentium processor benchmarks use 256KB of external cache.

While the 66MHz PowerPC and Pentium processors have competitive integer performance, the PowerPC has significantly better floating point performance as measured by SPECfp92. This is because the PowerPC has a better floating point architecture while the Pentium processor, to retain compatibility, still uses the stack-based architecture found in 80x87 coprocessors.

Also, the PowerPC can issue an integer and a floating point instruction in a single cycle. This leads to better performance for floating point-intensive applications such as visualization and engineering. Nevertheless, the majority of general-purpose computer applications are 90-95 percent integer-specific; hence, the

PowerPC and Pentium processors should perform comparably for most native applications.

### Future Versions

In addition to evolutionary increases in Pentium clock speeds, the Pentium's successors (the P6 and P7 chips) will probably incorporate 64-bit addressing and additional modifications to the basic instruction set architecture, potentially enabling a native RISC-style instruction set while retaining x86 compatibility.

Several future incarnations of the PowerPC—the 603, 604, and the 620—have already been announced by IBM and Motorola. The 603 will be a low-power version of the 601 suitable for battery-powered systems and hand-held devices. The 604 will incorporate high-performance features for high-end workstations and servers including an enhanced instruction set and more superscalar capabilities. Further enhancements may include dynamic branch prediction and dual integer operation execution capability.

The 620 will be the highest performance PowerPC chip and is positioned for servers and supercomputers. Current rumors suggest that IBM is developing a microcode x86 emulation that would boost PowerPC x86 emulation speeds to Pentium processor performance levels. The 603 and the 604 are scheduled to become available in the 2nd half of 1994, and the 620 is expected in early 1995.

The near-term competition between the PowerPC and the Pentium processor presages the next generation of software and microprocessor competition. As RISC developers are proving, there are better architectures than the x86 for maximizing performance.

Nonetheless, the migration to non-x86 platforms will not dramatically accelerate for several years. Why? Because Intel and other x86 vendors continue to create systems that are price, price/performance, and compatibility winners. Additionally, the RISC performance advantage depends on native software which is not yet available, and the maturation of stable 32-bit operating systems.

### Battle of the Software

Software will in fact be the determining factor in the long-term prospects for migration to non-x86 processors. While the microprocessor architectural battle shows a clear trend toward a RISC victory, the operating systems conflict offers no clear indication which paradigm will dominate. Rather, several new trends are



## SPECIAL REPORT

emerging in all of the competing operating systems' architectures. For now, the two dominant models appear to be *backward compatibility* and *cross-platform portability*.

Backward compatibility lets off-the-shelf software written for existing platforms run on new platforms. The importance of backward compatibility becomes obvious when you consider the current installed base of systems and software.

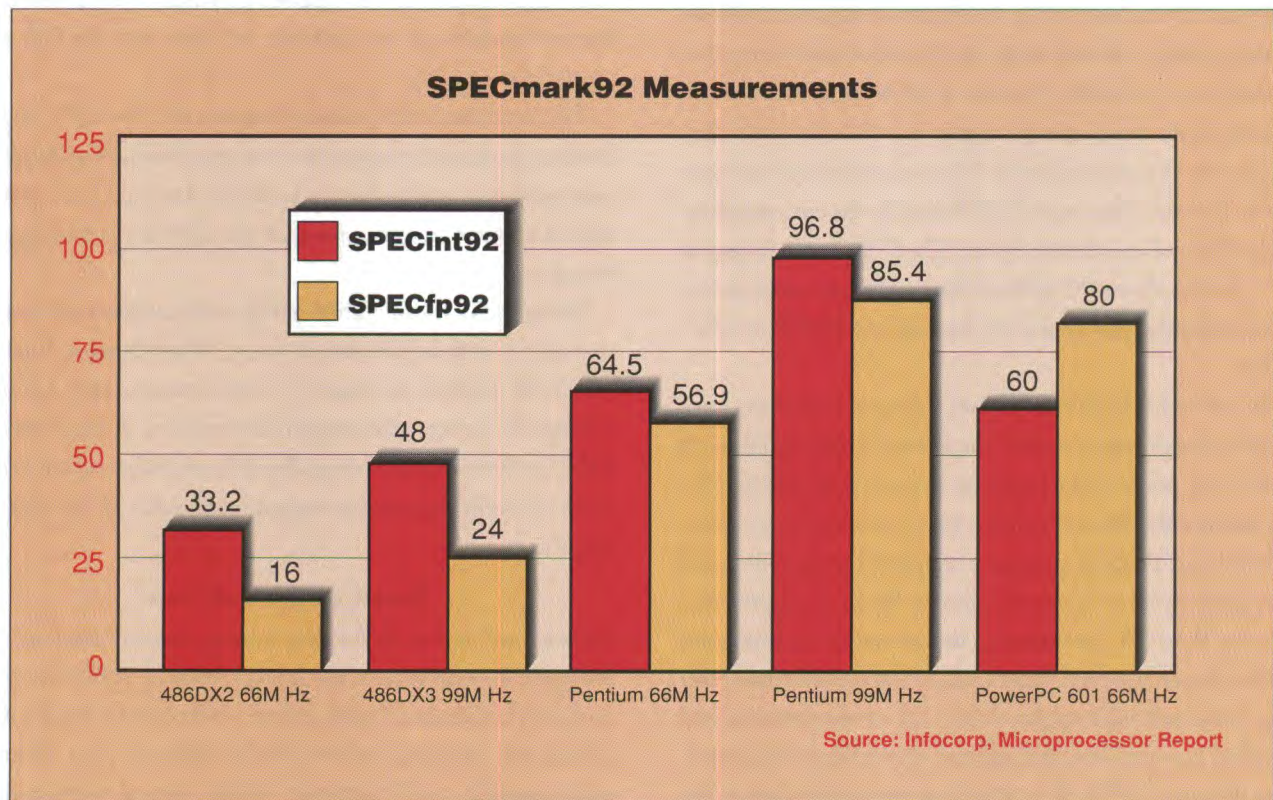
x86-based computers account for 85 percent of the 130 million microprocessor-based systems currently in use. In 1992 Intel shipped more than 30 million 32-bit x86 processors, with additional shipments of another 40 million expected in 1993. This represents an overwhelming hardware and software market share when compared to Apple Macintosh or all the RISC platforms combined. Apple Macintosh systems, for example, constitute only about 10 percent of the market, while combined RISC system sales fall into the remaining 5 percent.

Likewise, x86-specific software dominates the installed applications market with more than 50,000 DOS and Windows 3.x applications. In contrast, Apple Macintosh applications number about 7,500, and some 5,000 applications exist for various RISC platforms—mostly SunOS and IBM's AIX.

Thus, users considering migration from an x86 platform to a PowerPC or other RISC platform require support for DOS and Windows 3.x software. Likewise, Apple Macintosh users upgrading to the forthcoming PowerPC-based Macintosh will require support for existing 680x0-based software. (See sidebar for more on backward compatibility).

In contrast to background compatibility, which supports execution of "foreign" applications, cross-platform portability supports software in native mode across platforms through recompilation and redistribution. Cross-platform portability benefits both developers and users. Software developers can target more platforms, thus generating more sales. Users and IS managers gain consistent applications and interfaces in multi-platform environments.

You can see evidence of the trend toward cross-platform portability in the decoupling of operating systems from hardware architectures, and the decoupling of applications and operating systems. In an ideal world, a combination of cross-platform portability and backward compatibility would allow all applications to run on all operating systems which should run on all platforms. (See Across the Great Divide, page 39).





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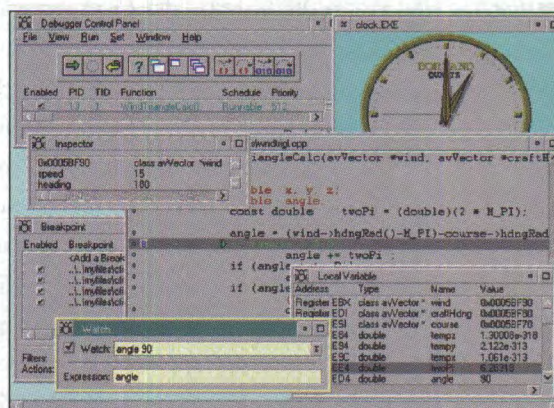
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## SPECIAL REPORT

### The Operating Systems Universe

Currently shipping Pentium processor systems primarily are running DOS/Windows 3.1, OS/2 2.1, and Windows NT. As other environments are developed, they likely will be made compatible with x86 and Pentium processors because of their large hardware installed base.

PowerPC 601-based RS/6000 workstations currently run IBM's AIX and will ultimately support a PowerOpen-compliant version of AIX.

PowerOpen is not a specific operating system, but rather a term for operating systems sold by members of the PowerOpen Association that are compliant with the PowerOpen specification. The association plans to support a standard architecture that lets users choose applications from various "PowerOpen-compliant" Unix environments, thereby avoiding the incompatibilities that exist across Unix platforms today.

The PowerOpen specification, derived primarily from IBM's AIX, includes X/Windows, and optionally includes the Open Software Foundation's Motif interface. PowerOpen will provide an attractive, compatible migration path for existing IBM workstation users, and will be the platform of choice for PowerPC-based Unix systems.

The first PowerPC 601-based Apple Macintosh systems are due by mid-1994, and will run a PowerPC version of System 7 that also provides compatibility for existing 680x0-based Macintosh applications. Since System 7 is proprietary to Apple, it will

be available only on Apple systems, and will be the platform of choice for most existing Apple users. But don't expect much migration from Unix applications to Macintosh.

For the merger of Apple with other operating environments, look instead to Taligent. This Apple/IBM joint venture plans to deliver a completely object-oriented, platform-independent operating system known as Pink. IBM and Apple will migrate object technology developed by Taligent into OS/2, AIX, and System 7 over time, and will also make the Pink personality available on their own operating systems when it is completed. (Because Pink represents an entirely new model and will not be available until 1995, it will most likely miss out on the first wave of software migration to 32-bits in the near-term.)

Workplace OS, the portable version of OS/2, will be attractive to OS/2 users looking for platform independence, more power, and high-end, mission-critical features and performance. IBM expects to begin beta-testing Workplace OS before the end of 1993, with general availability scheduled for late 1994.

The PowerPC will be the first Workplace OS platform, with the Pentium processor second, and possibly other processor platforms to follow. While the initial release of Workplace OS will run DOS, Windows 3.x, and OS/2, the system design can support other personalities such as AIX, Macintosh, and Pink in the future. With support for so many standard applications, Workplace OS should compete on any platform with any environment.

**TABLE 2**

<i>Operating Systems</i>	<i>Processor Platforms</i>	<i>Native Applications</i>	<i>Backward Compatibility</i>	<i>Availability</i>
DOS/Windows 3.x .....	x86, Pentium .....	DOS, Windows 3.x .....	N/A .....	Now
Apple System 7 .....	PowerPC .....	Macintosh .....	Macintosh .....	1Q94
PowerOpen .....	PowerPC .....	PowerOpen .....	DOS, Windows 3.x, AIX, Macintosh .....	2Q94
Taligent Pink .....	PowerPC .....	Pink .....	DOS, Windows 3.x, Macintosh .....	1995
OS/2 2.x .....	x86, Pentium .....	OS/2 .....	DOS, Windows 3.x, OS/2 16-bit .....	Now
Workplace OS .....	Pentium, PowerPC .....	OS/2 .....	DOS, Windows 3.x, AIX .....	4Q94
Windows NT .....	x86, Pentium, MIPS, Alpha, PowerPC .....	Win32 .....	DOS, Windows 3.x, POSIX .....	Now <sup>1</sup>

<sup>1</sup>Alpha version currently in beta test, PowerPC version expected during 1994.



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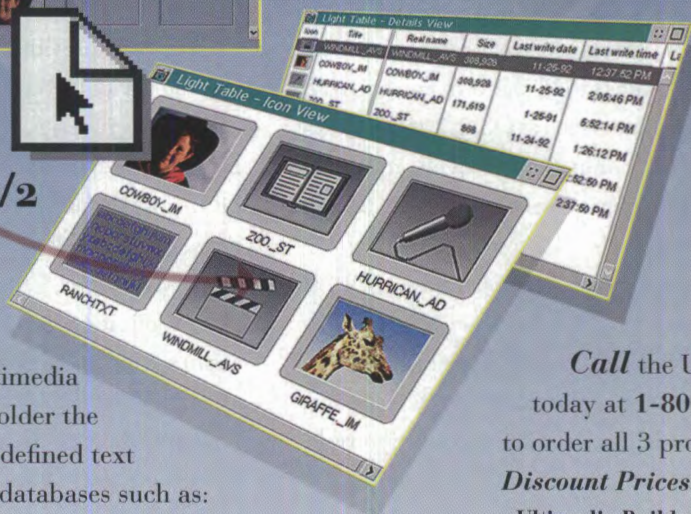
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## SPECIAL REPORT

Windows NT, Microsoft's portable 32-bit version of Windows, is currently available for Pentium processor and MIPS systems, and a DEC Alpha version is in nearing completion. A PowerPC version of NT is expected sometime in 1994, and Microsoft appears to be aggressively porting NT to as many platforms as possible.

Although Windows NT is ahead of Workplace OS at the moment, its immaturity and inability to compete with 32-bit x86 client platforms like OS/2 2.x are inhibitors to 32-bit application development in the near term, and give IBM the time it needs to complete Workplace OS. However, with Microsoft's outstanding developer support and marketing, Windows NT is currently the leading contender for the long term on non-x86 platforms.

While the Apple Macintosh and Unix workstation markets offer opportunities for volume shipments, the volumes will not be significant when compared to the PC market. To date, RISC proponents have not had much success convincing the major PC vendors to produce low-cost RISC-based PCs. If PC makers create low-cost PowerPC-based PCs, however, Windows NT and ultimately Workplace OS appear to be the most viable platform

alternatives because of the existing installed base and migration momentum. To penetrate the high-volume PC market, RISC-powered systems must rely on operating systems and applications that are not yet available or mature.

That may take a while. Application developers in the x86 PC market who are migrating to 32 bits will first target the x86 32-bit platforms because of the number of 386 and 486 systems in place and the continued growth in the x86 market. Software vendors will then leverage their PC-based products into selected RISC markets, based on volumes and available operating systems. As a result, it will take years for a substantial native application base to grow for RISC markets.

### The Outlook

The Pentium processor and the PowerPC are the two most significant competitors in the platform wars. The Pentium processor, because of its history and huge installed base, is clearly the front-runner for capturing the high-end PC market and portions of the low-end and mid-range workstation market. The PowerPC is the only RISC candidate that has the potential to ship in volumes large enough to compete with the x86-based offerings.

### LOOKING BACK

**U**sers demand, reasonably enough, that any new platform be able to run everything the old platform ran, and run it at least as well. Operating systems such as OS/2 2.1 have already demonstrated how backward compatibility can be provided on the same platform, but this task is considerably more difficult across processor platforms.

While RISC processors can run native software fast, they are not inherently compatible with programs written for other architectures. Since the PowerPC does not implement the Intel x86 or the Motorola 680x0 instruction set, PowerPC-based systems must use software *emulators* to run non-native software. Emulators imitate non-native systems and execute non-native programs by translating their instructions into equivalent native instructions.

The leading emulation products for DOS and Windows support are Insignia Solutions Inc.'s SoftPC, Locus Computing Corp.'s Merge for Unix environments, and Sun Microsystems Inc.'s upcoming Wabi software for Windows compatibility in the Solaris environment. However, none of these prod-

ucts currently provides absolute compatibility, the ability to use existing device drivers, or performance comparable to that of a native x86 processor. In fact, in testing SoftPC on a 150MHz DEC Alpha system (which is much faster than PowerPC 601), DOS and Windows programs ran slower than they did on a native 25MHz 486 system.

Apple's System 7 and PowerOpen will both provide Macintosh Application Services (MAS), an emulator that will allow existing Motorola 680x0-specific Macintosh software to run on a PowerPC-based system. Initial testing of MAS on prototype PowerPC systems indicates that performance of 680x0-based Macintosh applications is slower than on a 25MHz 68040-based Macintosh.

To enable RISC processors to run DOS, Windows 3.x, and Macintosh programs is a difficult task, and with current technology the result does not compare in price, performance, or price/performance to running on a native x86 or 680x0 processor. However, emulation technology will continue to evolve and improve over time.



## SPECIAL REPORT

However, the PowerPC-based systems will have to overcome all of the inherent problems facing any RISC candidate—those of backward compatibility, price, price/performance, and native application software.

Over the next two to three years, cross-platform operating systems will mature, more 32-bit software will be developed, and emulation technology will improve. While IBM, Motorola, and Apple accelerate their efforts to introduce PowerPC-based products, Intel will be able to continue producing x86-based systems that are still price, price/performance, and compatibility winners, maintaining and growing the x86 market.

### ACROSS THE GREAT DIVIDE

**C**ross-platform portability comes in one of two ways: operating system-dependent or operating system-independent.

In the former case, the application is coded to the API of an operating system that is available on multiple platforms. In the latter scenario, the application is coded to an operating system-independent interface, such as an application framework or object-oriented programming technology, that is available on multiple platforms.

To enable operating systems across processor platforms with different instruction sets, advanced operating systems are appearing in *portable implementations*. To accomplish this, systems architects developed a construct called the *microkernel*.

Microkernel technology is the result of operating systems portability research conducted during the 1980s at Carnegie-Mellon University. A microkernel architecture such as Carnegie-Mellon's Mach isolates the portions of an operating system that are processor-specific and multiprocessor-specific in a module known as a microkernel.

Windows NT, PowerOpen, OSF/1, Workplace OS, and Taligent/Pink are all microkernel-based systems. All are based on the Mach microkernel, except Windows NT, which utilizes the proprietary NT Executive.

An unfortunate side-effect of portable implementations is that they generally have higher system hardware requirements and poorer performance compared to processor-specific implementations such as OS/2 2.x.

The Pentium processor is the system of choice for x86 users looking for more power, and is the ideal bridge to the non-x86 based processors for the future. Users currently evaluating RISC-based platforms in their enterprises will most likely purchase a few PowerPC or other RISC-based systems to get experience with the technology. However, full and effective implementations of PowerPC or other RISC-based systems in the enterprise will await the maturing of the market.

Over the long haul, the transition to 32-bit software and advances in emulation technology will pace the acceptance of RISC (or non-x86) architectures in the general computing market. However, by the time these technologies are mature, next-generation microprocessors that support a non-x86 RISC-style instruction set and the x86 instruction set may be available, effectively leveling the processor market. Only time will tell. ♦

*Michael S. Kogan, Sc.D., an independent consultant who specializes in personal computer software and systems, was lead designer of OS/2 2.0. Kogan is co-author of The Design Of OS/2.*

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# ADA & OS/2

BY JOSEPH J. LAZZARO

*Providing "reasonable accommodation" for disabled workers is not the expensive, complex process it's made out to be. A variety of OS/2 technology solutions are available.*

If you run or help manage a business, you don't need to be told about the Americans with Disabilities Act. What you do need to hear, though, is that you can comply with the letter of the new regulations without breaking the bank. In fact, it can be less costly or complex than you may think to accommodate disabled workers and avoid the costly penalties written into the three-year-old law.

As a manager, you ignore the ADA at your peril. When a New York man recently sued a company for failing to hire him because of his blindness, he was awarded \$6,000 in lost wages and \$20,000 in pain and suffering claims. If the company had known about a speech synthesizer that could have been purchased for a few hundred dollars, the situation likely would have played itself out very differently. The man would likely be employed, and the company would be \$26,000 richer—a winning situation all around.

## Letter of the Law

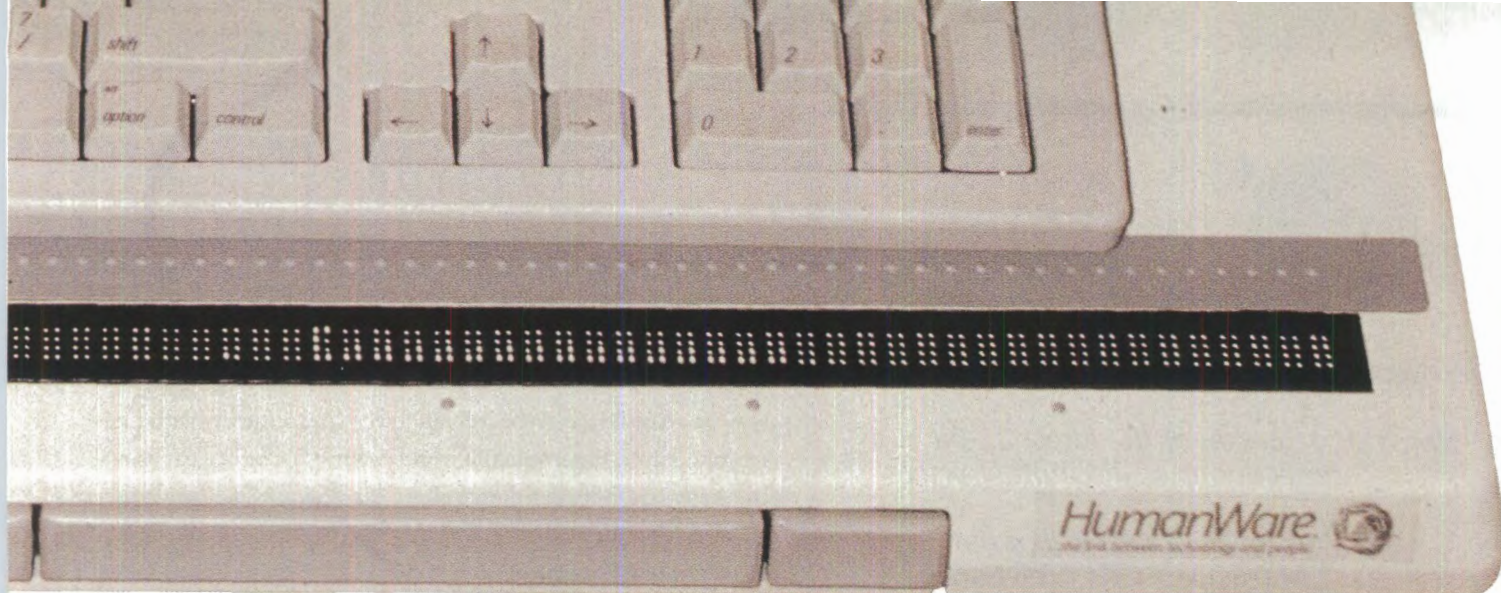
Signed into law in 1990, the ADA states that companies cannot discriminate against applicants or existing workers based on their disability. The ADA also says that "Reasonable Accommodation" must be provided to permit disabled workers and applicants to perform their jobs independently.

Therein lies the rub. The ADA has made company managers nervous because they fear that providing adaptive equipment is an expensive proposition. While accommodating some disabilities may indeed be complex, in most cases nothing could be further from the truth.

In fact, you're already way ahead of the game in ADA compliance. Personal computers are readily adapted for disabled per-

Photo: The ALVA Braille Terminal reproduces in braille the information seen on a standard computer screen.





## AN ADAPTIVE TECHNOLOGY FOR EMPOWERING DISABLED WORKERS

sons, in many cases for little more than what it would cost you to add a printer to an existing system.

According to Brian Charlson, network administrator and an adaptive computer instructor at the Carroll Center for the Blind in Newton, Massachusetts, "Once you have mastered memory management and interrupt-conflicts, making workstations on a network function with large-print, Braille, speech, or other adaptive systems is really no more complicated than doing the same on a stand-alone system. The real key issue is managing memory resources and resolving conflicts with other installed circuit-cards, especially network adapter cards."

The nature of the OS/2 operating system helps. Because of its object-oriented design, OS/2 is a ready and willing platform for adaptive developers. In fact, OS/2 is a particularly supportive environment for the disabled because of the ability to construct specialized objects like notebooks, dialogue boxes, or folders that suit special needs.

As James Thatcher, a researcher at IBM's Thomas J. Watson Research Center, observes, "Compared to other graphical user interfaces, OS/2 is highly compatible with adaptive hardware and software products because it possesses the internal hooks and system calls to work together with various forms of adaptive technology. An example of this is the embedded support within OS/2 for speech-output programs for blind users."

### Adapting the PC

Since most personal computers can accept circuit cards or external serial, parallel, or SCSI devices, it is a relatively straight-forward task to interface adaptive peripherals that permit equal

access to work and information. And, of course, adaptive software loads and configures as easily as does any other application or utility.

Many forms of adaptive technology are available to choose from, depending on the nature of the disability. Speech synthesis hardware and software permit blind and visually impaired users to hear their keystrokes and to verbally "read" both text- and graphics-based computer screens. Deaf and hearing-impaired users can employ the computer as a communications device to "talk" over the telephone or to share information within the office environment.

Local area networks, fax, on-line conferencing, and electronic mail are also empowering technologies for hearing-impaired workers, permitting communication in a non-verbal manner. People with motor impairments can use the computer to communicate and access information through devices that bypass the keyboard. Hardware-based keyboard emulators can, for example, be plugged directly into the standard keyboard socket and used to control an OS/2-based computer system. As far as the computer is concerned, input is coming from the standard keyboard. For example, the T-TAM from the University of Wisconsin's Trace Center allows any serial output communication aid to be used instead of the computer's standard keyboard and/or mouse.

### IBM Keyguard

One of the simplest forms of adaptive technology is a shield for the traditional computer keyboard that helps assure that the right key is pressed only when the user wants to do so. A product of IBM, the Keyguard (\$80) is a molded plastic overlay that fits over





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## **FEATURE**

a standard qwerty-style keyboard. It has holes that permit access to the individual keys. In order to strike a key, a finger must be inserted into one of the holes.

The guard is designed for individuals who have the ability to type on an ordinary keyboard, but have some difficulty with fine motor control. It permits the worker to rest his or her hands on the keyboard between keystrokes, considerably reducing the number of accidentally struck keys. The Keyguard also allows the keyboard to be positioned at the angle that is most comfortable for efficient data entry.

### **Screen Reader/2**

The shift to graphics-based user interfaces has caused great concern among blind computer users because reliable methods to verbalize graphics platforms like OS/2 and Windows—that is, convert them to speech-based output—were not available until very recently. Now, however, speech and Braille output screen reader systems have burst upon the market, broadening still more access opportunities for disabled users.

Screen Reader/2 v1.1 from IBM (\$723) is a graphics-based program for blind and visually impaired computer users running OS/2 2.1. This powerful software package permits blind users to hear their keystrokes aloud, and to read the screen by character, word, line, icon, or window.

Once installed, the screen-reading software begins speaking immediately after OS/2 and Presentation Manager load into memory.

Operating the speech software is as simple as using an arrow key to move around the screen. When the cursor or mouse is moved to an object, the speech software automatically verbalizes that letter, word, line, window, or individual icon. An external keypad is also used to read pre-defined screen regions.

Screen Reader/2 can also monitor any portion of the screen for changes, and make verbalizations based on those changes. For example, if the phrase "main menu" suddenly appears in a window, Screen Reader/2 can be programmed to verbalize the entire window, or any select portion, automatically.

The software will work with many commercially available speech synthesizers; voice quality depends on the brand of speech hardware being used. For the most natural-sounding speech, consider the DECTalk synthesizer from Digital Equipment Corporation.

Screen Reader/2 is the first verbalization program to offer access to three operating environments: OS/2 2.1, Microsoft Windows 3.1, and DOS. (A DOS-only version is also available from IBM.) For advanced users, it comes with its own program-



## FEATURE

ming language. Similar to Pascal, the Profile Access Language (PAL) permits Screen Reader/2 to verbalize applications software by monitoring what is painted to the screen, allowing the creation of speech-friendly talking applications.

### Braille Output

Screen Reader/2 can also provide Braille output with the addition of an optional refreshable Braille display device. Designed especially for blind computer users, refreshable Braille displays translate computer output into Braille in real time using mechanical pins that pop up and down under software control. The Alva Braille display from Humanware of Loomis, California, consists of a metal strip that holds the mechanical Braille dots for the user to read. Arrow keys move the display through a document, spreadsheet, or other types of files.

The Alva displays consist of standard 8-dot Braille cells, and can be purchased in either 20, 40, or 80 cell configurations. Alva's four models are compatible with DOS, Windows, and OS/2. The 23 and 43 are portable units, while the 43 and 83 are desktop models. Each unit includes status cells for the monitoring of cursor location and video attributes such as highlight bars and screen colors. The prices of the Alva range from \$4,995 to \$14,495.

Braille printers can also be used with OS/2 systems to generate hard-copy Braille documents on demand. Since most Braille printers interface through standard serial or parallel ports, they can be connected easily to stand-alone or networked computers.

In order to generate hard-copy Braille, all you need is a Braille printer and a special piece of software known as a Braille translator. The translator accepts standard word processing files and formats the text for proper Braille output. The Juliet Braille printer from Enabling Technologies of Stuart, Florida (\$3,995), prints up to 40 characters per second, and can connect via a serial or parallel port. Juliet can print on both sides of the paper, and can also emboss on metal or plastic for sign-making. The DOS-based Duxbury Braille Translation software from Duxbury Systems (Littleton, Massachusetts, \$495) can translate text files into standard Braille, and is compatible with most Braille printers on the market. Duxbury can run in a DOS window under OS/2.

### PhoneCommunicator

Designed for deaf and hard-of-hearing users, the PhoneCommunicator from IBM is a DOS-based system that permits a computer to be used as a text-telephone device, passing messages back and forth over telephone lines. The system allows deaf persons to "talk" to hearing persons, provided the hearing person has a touch-tone telephone. No special equipment other than the tele-

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November 1993 OS2 Professional 43



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We'd like to make a suggestion. BenchTech for OS/2 is a suite of more than 25 benchmarks written specifically for OS/2. If you are in the market for OS/2 capable computers, or you just want to optimize the computer you have, BenchTech for OS/2 is the tool you need.

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## FEATURE

phone is required by the hearing person.

PhoneCommunicator has a built-in speech synthesizer that converts typed text into "spoken" words. The hearing person listens to the speech synthesizer and uses the touch-tone keypad to respond, in one of two ways. PhoneCommunicator can accept either spelled input or numerical sequences that its dictionary recognizes as shorthand for words.

The device can also communicate with standard Telecommunications Devices for the Deaf (TDDs) and personal computers operating in "chat" mode, and with on-line services and bulletin boards.

PhoneCommunicator also has an automatic answer mode, and can record incoming messages to be viewed by the deaf user at his or her convenience. Commonly used messages can be stored and played back on command, useful for routine communications tasks, such as notifying a co-worker when a report is ready.

### On the Drawing Board

IBM is currently alpha-testing an OS/2-based screen magnification program. According to sources at Big Blue, the program can work with Screen Reader/2, allowing users to obtain both speech

### Customizing the OS/2 Keyboard

You can customize the behavior of the standard keyboard from within OS/2 2.1.

1. Select OS/2 System from the desktop;
2. Select System Setup;
3. Select Keyboard.

You will see a notebook with different tabs to allow you to customize keyboard functions.

You can adjust how long a key must be held down before it is accepted as a keystroke (Acceptance delay), the rate of speed at which the key will repeat its function when it is held down (Repeat rate), and how long a pressed key must be held down before it begins repeating its function (Delay until repeat).

The sticky keys input method lets you press and release a series of keys (for example, Ctrl+Alt+Del) sequentially but have the keys behave as if the keys were pressed and released at the same time.



## FEATURE

and enlarged type at the same time. This program, if it becomes a product, would be very useful to persons with low vision, users with learning disabilities, or for those whose eyes grow tired staring at a crowded video display.

According to a reliable source, IBM is also working on a set of utilities to make OS/2 easier to operate for persons with disabilities. Similar to the Access packs for DOS and Microsoft Windows. The new set of utilities would include keyboard and mouse enhancements useful for persons with motor impairments. The OS/2 Access package would also include utilities for deaf users that would translate speaker beeps into a visual format. As of now, IBM is keeping these plans, if they exist, closely guarded.

IBM also is about to roll out a new voice recognition system that functions as a voice-writer running under OS/2. According to IBM sources, the expected release date is late 1993 or early 1994, with the target price at about \$1,000. The voice-input system has a vocabulary of 30,000 words, similar to that of Dragon Dictate, a \$4,995 product from Dragon Systems of Newton, Massachusetts.

Running on a 486-66mhz machine with 32MB of RAM and

about 200MB of disk space, the system will be able to recognize discrete speech so long as there are brief pauses between words. Thus it will be possible for an employee to dictate text that is then passed into any standard word processor. According to John Altson, an IBM product manager in Somers, New York, the system is being used at the *New York Times* with persons with repetitive-stress injury, and could be customized to accommodate people with motor impairments.

### Final Words

The good news is that OS/2 comes out of the box ready to run a variety of adaptive hardware and software. Many disability-related application programs written for DOS or Windows can run in DOS or Windows sessions under OS/2.

The bad news is that there's still a ways to go. According to Dr. Greg Vanderheiden of the Trace Research and Development Center at the University of Wisconsin, "At the moment there isn't a great deal of adaptive hardware and software written specifically for OS/2 yet. However, it is one of the few GUI operating systems which has a screen reader for it, and is one of

*continued on page 50*

## An ADA Resource Guide

**T**here are numerous free sources of advice and information on how to comply with the ADA.

- ▶ Your local state rehabilitation agency or commission is a good starting place; many will provide consultation at no charge, and in some cases, will loan adaptive equipment free of charge.
- ▶ The National Institute on Disability Rehabilitation and Research runs a toll-free hotline to connect you to your nearest ADA Technical Assistance Center. The hotline can field questions on all aspects of ADA compliance and is in operation during normal business hours. You can reach the NIDRR hotline by calling (800) 949-4232.
- ▶ A free handbook on how to adapt PCs is available from the Clearing House on Computer Accommodations, a service of the General Services Administration in Washington, D.C. Write to: Susan A. Brummel, Director, CHOCA, c/o GSA, Room 2022, KGDO, 18th and F Sts. NW, Washington, DC 20405.
- ▶ A free source of information on-line, the Job Accommodation Network (JAN) BBS, is also a good place to ask questions

of the experts. JAN can be reached by calling (800) 342-5526.

- ▶ A research and development center that focuses on assistive technology, the Trace Center at the University of Wisconsin, maintains databases devoted to adaptive technologies and their application. The Trace Resource Book (\$40) and the Co-Net CD (single CD \$27; two-issue subscription \$50) are available from the Trace R&D Center, S-151 Waisman Center, 1500 Highland Av., Madison, WI 53705, (608) 262-6966, fax (608) 262-8848.
- ▶ Project EASI (Equal Access to Software and Information) provides guidance in the area of access-to-information technologies. Project EASI staff and volunteers stay informed about developments in the adaptive computer technology field and disseminate that information to schools, colleges, universities, and into the workplace. EASI is reachable via the Internet at [easi@educum.edu](mailto:easi@educum.edu) or [easi@educum.bitnet](mailto:easi@educum.bitnet). You can also write to EASI c/o Educum, 1112 16th Street, NW, Suite 600, Washington, DC 20036. Voice and fax calls go to (310) 640-3193.
- ▶ IBM has established a toll-free national support center to assist persons with disabilities: (800) 426-4832.







## VENDOR PROFILE

# CITRIX

HARD WORK AND A LITTLE BIT OF LUCK

After writing 350,000 line of code, Edward Iacobucci had to do it all over again. And now Citrix Systems, Iacobucci's baby, is shipping the result: WinView for Networks.

BY JENNIFER DEJONG

**E**dward Iacobucci likes to talk in terms of minor miracles. That's true particularly when he's thinking back on the business he founded almost half a decade ago. The first miracle being able to raise the capital to start Citrix Systems, Inc., in 1989. Then there was a second—writing in only one year the 350,000 lines of code needed to create the first version of the company's OS/2-based applications server software. The third miracle—but not the last—was doing it all over again for OS/2 2.0.

"There's something to be said for not knowing some things are impossible," says Iacobucci, whose company stands as his strongest evidence: It currently is 70 employees strong and growing at a rate of 35 percent a quarter.

His persistence paved the way for Citrix's current flagship product, WinView for Networks, which shipped earlier this year. Based on the firm's original applications server, the product allows multiple remote users to tap simultaneously into both Windows- and character-based OS/2 and DOS applications that reside on a central server.

Users like the program because it's fast and easy to use, and it offers the tight security critical to multi-user systems. It's especially well-suited to field salespeople who need to check their e-mail messages or access the corporate database to review a customer account or check inventory. They dial in via phone lines to the WinView server or connect directly to NetWare or LAN Manager. Once connected, the program acts and feels as if the user is running applications locally. That means even older, slow PCs can function as full Windows workstations.

Although the modest Iacobucci might not agree, the success he is enjoying with WinView for Networks actually has little to do with miracles. It is instead compounded from three key ingredients: top-notch engineering expertise, a willingness to fight a lengthy uphill marketing battle, and a conscious decision to form alliances with—rather than make enemies of—his industry competitors.

### The Original OS/2 Guru

Prior to founding Citrix, Iacobucci lived and breathed OS/2 for five years. In fact, he led the IBM-Microsoft joint development effort that conceived the original OS/2 product.

"Those were interesting times," he recalls. As an 11-year IBM veteran who spent the first half of his career in large systems, "I worked with some of the top minds in the industry to bring to the PC platform a level of sophistication that had never before existed."

The original goal was to come up with an operating system that would deliver a PC platform offering access to mainframes, while meeting Microsoft's need for a DOS replacement. The result, the original character-based version of OS/2, shipped in 1987.

The following year, Iacobucci took on the more technical role of setting directions for the 32-bit OS/2—what was to become version 2.0. But as his experience with OS/2 deepened, Iacobucci also became more and more interested in the possibilities that the operating system held for low-end multi-user systems. He realized that other than Unix vendors, no one was serving that market. And Unix couldn't offer what OS/2 could: compatibility with the enormous installed base of DOS.



## VENDOR PROFILE

"I began to think about the mom-and-pop shops, the corner drugstores," says Iacobucci. "[At that time] the big guys weren't interested in those markets."

So by early 1989, with the IBM-Microsoft relationship essentially still intact, he set out on his own. He had just published the best-selling *OS/2 Programmers Guide*, complete with a foreword by Bill Gates, and for a time he considered a career in writing books. But the stronger calling was to found a company and develop an OS/2 product.

Trouble was, he didn't know if he had what it would take. What he *did* know was that he couldn't do it on a shoestring. "An operating system company," he points out with some justice, "is not a garage operation."

To succeed, he knew he would need extensive ISV (independent software vendor) support, strategic alliances, and a well-developed channel—not to mention high-level engineering resources. More important still, he needed some serious venture capital and a nod of approval from Microsoft.

### Citrix is Born

Thanks to a little bit of luck and a lot of hard-won respect, Iacobucci got both. Microsoft granted him an OEM license for OS/2. Venture capitalist Sevin Rosen Funds, with co-investors Kleiner, Perkins, Caufield, and Byers and the Mayfield Fund, put up the money. With a name derived from citrus (for Florida) and Unix (for multi-user systems), Citrix Systems, Inc., was born in Coral Springs, Florida.

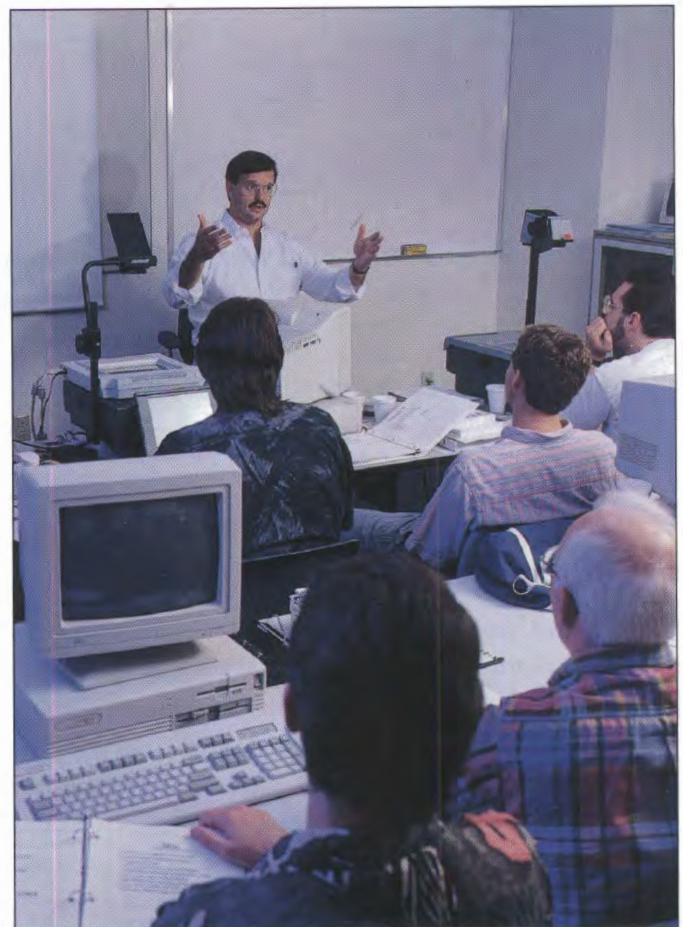
By September of 1989, Iacobucci had assembled a team of 14 people, all of whom had followed him from IBM, and set out to create Citrix Multi-User, a DOS-compatible, character-based applications server geared to the needs of small business. The

***"Those were marvelous times," recalls Iacobucci. "The energy of the start up was incredible."***

team wrote 350,000 lines of code in a year's time—a feat that would require the labor of hundreds of programmers at a large firm.

"Those were marvelous times," recalls Iacobucci. "The energy of the start up was incredible."

The product shipped in 1991, and although he won't say how many units sold, he admits it would have been easy to fold at that



*A Citrix Systems engineer leads a three-day international resellers training class.*

time. "Building a channel for an infrastructure product is a difficult process," he notes. "The reseller has to bet his business on it."

### Turning the Corner

Iacobucci took that gamble, and Citrix began the formidable tasks of learning how to sell the product while writing a new version for 2.0.

By 1992, users were crying out for LAN integration and for Microsoft Windows' graphic user interface. At the same time, interest in remote computing was on the rise. These factors

led Citrix to create WinView for Networks, which incorporates all three capabilities. Yet another minor miracle.

Citrix licensed Windows 3.1 from Microsoft. It also began working closely with the dominant network vendor, Novell, to incorporate Citrix technology in the NetWare OS/2 requester. By June 1992, the two firms signed a joint marketing agreement that would allow Citrix to sell its products through



## VENDOR PROFILE

Novell's well-established channel of platinum and gold dealers.

These moves led to a slew of other agreements, including the licensing of Windows NT from Microsoft, and joint marketing agreements with Shiva, DCA, Cubix, and Centrum. While some might have regarded these firms as competitors, Citrix saw them as partners. "It's not a war," says Iacobucci. "Application server technology is complementary."

Since its release earlier this year, WinView for Networks has been selling steadily. Iacobucci declined to say how many units have shipped or to give Citrix's revenues, but users say they are happy with the product.

"Nobody beats WinView's speed across the phone line. [The performance] was shocking when we saw it," says Chip Bankston, of CMI Group, a reseller, in Baton Rouge, Louisiana, who uses the system in-house and sells it to corporate and government sites.

One of Bankston's customers, a local insurance company that deals in worker compensation claims, uses WinView for its 19-person field sales force. By dialing into the central server at headquarters, each of them can tap into the corporate database to verify a lawyer's report on a particular claim or check whether a payment has been issued. "All the end user knows is that he makes a request and the results appear," says Bankston.

One drawback customers find with the system is that the current version of WinView doesn't let you copy files easily from a local drive while you're connected to the central server. Iacobucci, who takes pride in always listening to his customers, hints that the problem will be addressed in a future version.

Among Citrix's upcoming product offerings is a version of WinView ported to Microsoft NT as a complement to the OS/2 version. For the company, Iacobucci is determined to sustain growth and to remain aggressive in responding to the marketplace. He won't say when and if Citrix will go public, or what the company's next miracle might be. But one thing is sure: No matter how large his company grows, he will remain unassuming about his success.

Says Iacobucci: "I would like to say I was good at what I did, but I think I just got lucky." ♦

*Jennifer deJong is a freelance writer based in Boston, Massachusetts.*

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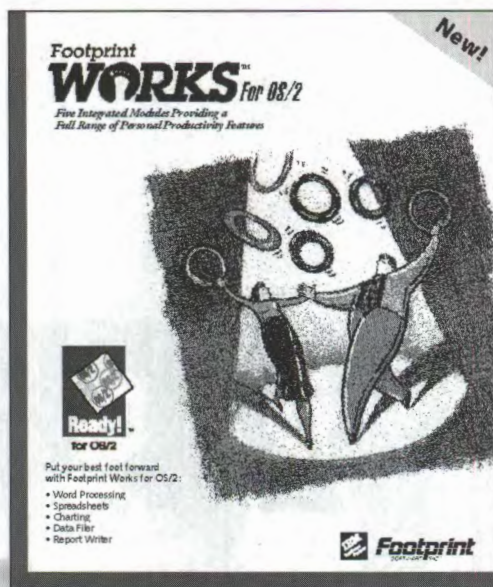
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

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## FEATURE

*continued from page 45*

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The personal computer is a vehicle for putting persons with disabilities on the road to independence, allowing millions of men and women to pursue career and educational goals. Local area networks offer even more to disabled workers, as they create a level playing field where all can equally share information. ♦

*Joseph J. Lazzaro is author of "Adaptive Technologies For Learning And Work Environments" (1993, American Library Association, 800-545-2433), a 250-page guide on how to adapt personal computers for the disabled. He can be reached on the Internet as laz-zaro@bix.com.*

### It Pays to Comply

Adaptive hardware and software pays for itself in the long run. According to Michael Dziokonski, director of employment services at the Massachusetts Commission for The Blind, "Adaptive technology puts people back into the work force, and this saves millions of dollars in social security payments and taxes. When a person returns to the work force, he or she becomes a tax payer, rather than a tax burden."

Closer to home, there are tax advantages for small businesses that provide adaptive equipment to their workers, making it more attractive to comply with the law. The business equipment purchased by a company to comply with the law is a legitimate tax deduction as a business expense. Under the recently modified tax code, the maximum allowable amount of capital equipment that a business can expense (deduct in the year of purchase rather than over several years through depreciation) has been raised from \$10,000 to \$17,500.

The Disabled Access Credit (Internal Revenue Code Section 44) allows a tax credit rather than an ordinary deduction for expenses incurred by small businesses in complying with the ADA. (A deduction reduces the amount of income on which you owe tax, whereas a credit directly reduces the amount of tax you owe.) The Disabled Access Credit is available for 50 percent of "eligible expenses" up to \$10,000 per year.

For example, if a qualifying small business spends \$10,000 on adaptive equipment to accommodate a disabled employee pursuant to the ADA, that firm would be entitled to a tax credit of \$5,000 in any given year, less a \$250 deductible. A qualifying small business is defined as: one that has gross receipts of less than \$1 million per year or fewer than 30 full-time employees.



# Automated GUI Testing For Everyone

You *can* have your cake and eat it too—all it takes is the right utensils.

BY LINDA G. HAYES

**I**ronically, the very things that make graphical interfaces so easy to use—the fluidity of context, the pleasing icons, the proportional fonts—make them difficult to test with automated tools. This is because traditional testing tools expect the same input to produce exactly the same output, and graphical environments are not static enough for this model to work. Although a person can easily make allowances for differences such as variances in the size or placement of a window, software can't cope as easily.

There are a number of automated testing tools available for GUI applications that seek to address these challenges. But these tools vary widely in approach and results.

Recent innovations, however, promise automated testing tools for GUI applications that introduces structure to the testing process while flattening the learning curve so that mere mortals can be productive, both now and in the long run.

## Capture/Playback Testing

Let's admit it: When it comes to automating tests, most testers want to sit down and just do the test manually, while the inputs and outputs are unobtrusively saved for later automated execution and comparison. This approach, known as capture/playback, has enjoyed popularity for text applications. Input was saved and replayed as keystrokes; output was stored and compared as screen images.

But even for stolid and predictable single-threaded text applications, maintenance of the captured tests was often so laborious that they simply were discarded and recreated when the application changed. A single difference, even if cosmetic, could have a pervasive impact. For example, a new addition to a menu could ripple across every test that traversed the menu: Not only would new tests have to be added, but old tests would require changes to both the keystrokes and screen images as well.

As a result, it was often easier to just start over than to locate every instance and make changes. Unfortunately, if tests are discarded too frequently, you lose not only the productivity automation conveys but also the cumulative knowledge from experienced users captured in the tests.

For graphical applications, there is yet another problem. You have to worry not only about what to do if the application changes, but also whether the test will repeat itself successfully even if the application hasn't changed. This is because the state and context of the entire system directly affects your application's behavior and appearance.

As a simple example, the position of a new application window is determined relative to other windows already present. Although this is one of the friendly features that make graphical interfaces so accommodating, it can wreak havoc with your test. To obtain precisely the same result in a later test run means you must be aware of—and in control of—the entire operating environment of your workstation.

Some testing tools have tried to address this issue by allowing testers to define windows or areas of interest; these are stored as bitmap images for later comparison, often using sophisticated pattern recognition routines. But aside from the amount of storage needed for high-resolution bitmaps and the computing power required to find and compare them, there are still pesky problems such as the varying resolutions and attributes possible from different graphics cards—a variable that may cause inconsistent results from one computer to another.

And if you thought maintaining text screens was tedious, just try bitmaps. Unless you are prepared to modify them pixel by pixel (there can be more than a million of them on one screen), you have to recapture them—which means you have to recreate the test. And if you thought editing keystrokes was tricky, you can forget mouse movements. Editing a mouse event outside of context is like trying thread a needle in the dark.

## Scripting Languages

Given these headaches, some graphical environment tool vendors have decided to approach the problem from the inside out. Instead of capturing the physical events—keystrokes, mouse clicks, screens or bitmaps—these tools allow the Presentation Manager events to be captured and enhanced with scripting or programming languages.

It works like this. All of that freedom of context and most of



## EYE ON THE MARKET

those gorgeous graphics are managed by the Presentation Manager. Instead of each application carrying in it the rules and details for behaving and displaying in a consistent way, it is all provided by the graphical interface itself. The application makes requests of the interface, and the interface carries them out. These communications are called *events*.

For example, the application asks for a radio button to be presented. It is the Presentation Manager that draws the box, shows the options, colors in all the pixels to show the state, and lets you toggle it with a mouse. Your application just wants to know, was it turned on or off?

With certain exceptions for custom controls, these events can be recorded in lieu of the physical activities. So the selection of an item from a menu, for example, could be recorded as the event Select Menu Item with the selected option name, instead of as a disembodied mouse click at an impersonal pixel location.

The beauty of this approach is that even if your application window is too far down to accommodate the menu list and the interface obligingly pulls the menu up instead of down, your test will still select the right item; because the Presentation Manager is in charge, it knows where your menu item resides, so you don't have to.

Most of these tools save these events into a file as statements in the Visual Basic or C programming languages. You can then edit these files and add logic for comparing results and acting on the answer, or create loops of repetitive input, or other programmable structures for enhancing your test and monitoring the results.

But maybe you can't. Maybe you are one of the majority in the quality assurance or testing area who knows the business side of the application inside out, but can't program your VCR, let alone Basic. Maybe programmers like being able to mess directly with the test source code, but for most of us it sounds like writing a program to test a program. Where does it end?

So most GUI testers have a dilemma when they seek to automate: Do they sacrifice repeatability and maintainability for ease of use, or do they get a degree in computer science?

### Structured Capture/Playback

But all is not lost. A new class of testing tool, for both text and graphical applications, approaches test automation in a completely different way. The approach is called structured capture/playback, and it means instead of trying to choose between testing and programming, you get the best of both. Think of it like this: Suppose you were training someone to do the test for you, and so you let him or her watch you and ask questions along the way about why you were doing certain things and what you expected to happen. And what if this trainee was so diligent that he or she took copious notes, not just of what you did and why, but where you were and what happened? Sounds great, doesn't it?

It is. This "trainee" is actually a structured capture/playback tool. Instead of taking notes or producing program source code, tools such as these store your test as a script you can read and understand, complete with logic that duplicates your own deci-

**The following companies are among those that offer software testing products that run under OS/2. When selecting a product, consider how it handles stress testing, its capture/replay abilities and script generator, and how it is priced.**

**AutoTester Inc.**

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Fax (214) 750-9668  
Product: AutoTester

**IBM Corporation**

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(408) 463-3300  
fax: (408) 463-3114  
Product: WITT

**Mercury Interactive**

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fax (408) 982-0149  
Product: TestRunner

**QES**

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fax (203) 289-2009  
Product: QES/Architect

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(617) 576-2257  
fax (617) 864-7747  
Product: ATF

**SQA**

10 State St.  
Woburn, Massachusetts 01801  
(617) 932-0110  
fax (617) 932-3280  
Product: TeamTest



## EYE ON THE MARKET

sion points. The finished result is a documented, executable test script that mimics not just your actions but also your expectations and decisions.

The documentation is provided in English, and the execution is performed through commands. These commands resemble the event statements found in earlier scripting language tools, but in this case they are presented by a menu-driven front end that steps you through development with on-line help and familiar controls. Compared to a scripting language, this is more like a fill-in-the-blank than an essay test.

In addition to providing logic, these commands also allow test contents to be designated as variable fields. For example, instead of storing an account number and its attributes as fixed values, the script can denote them as fields whose values can be varied based on the contents of another, external file. So by simply supplying the test script with a file containing account numbers, a single sequence of steps to process a single account can be converted to process an entire chart of accounts.

This is where you can get true leverage from automating your tests. GUI application testing now can truly be for everyone. Testers who know the application can perform their tests as usual, with the minor exception of explaining along the way what they want to verify and what to do if it doesn't check out. For example, if a radio button isn't on, they may decide to just turn it on and go on; or, they may decide to log an error before they continue.

The script created from these actions is stored as a text file that can be manipulated in the work processor of one's choice. Programmers, on the other hand, or those with a more technical bent, still have the power and flexibility of a scripting language to expand their test coverage with iterative loops or conditional steps. They can use the friendly front end to create their commands and logic, or they can cut straight to the chase and enter the script as an executable text file, or they can mix it up. For example, they could perform a series of steps once to capture the sequence, then edit the resulting script to create a repeating loop for executing the sequence a hundred times over.

With either approach, the end result is a library of test scripts that can be easily understood, automatically executed, and rapidly maintained over the life of the application. This capability means GUI testers can devote more time to testing and less to the tool itself. And that, after all, is what it's all about! ♦

.....  
*Linda G. Hayes, a frequent author and speaker on automated testing, is president & CEO of Software Recording Corporation.*

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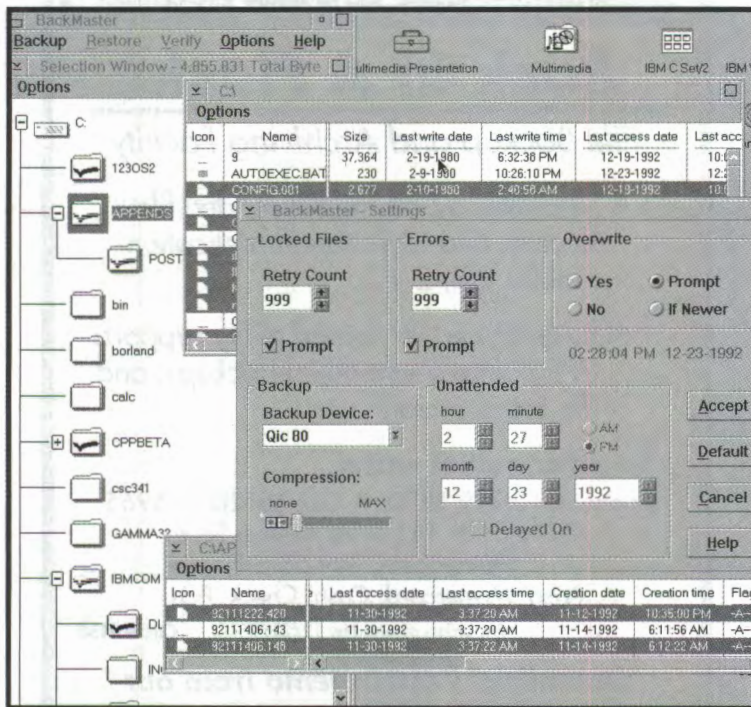
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## HARD DRIVE

*Adventures in gear for the OS/2 Professional*

# Panasonic 580—Up and Available

Panasonic has introduced a new line of notebooks and the model 580 is right for OS/2 users.

BY EDWIN BLACK

**E**arlier this year, Panasonic took advantage of the non-availability of ThinkPads and rushed to market with its series of fast notebooks designed specifically for the corporate user. In an interesting marketing twist, the company is deliberately keeping its line out of the computer supermarkets, selling them instead through corporate resellers such as Compucel. Panasonic has thus been able to hold prices to a level that makes fleet purchases attractive.

The entry model was the 5-pound CF-1000, a 386-25MHz ultra-lite sporting removable floppy drive slots that double as extra battery bays. Selling points include a 14,400kbps internal modem, a bright side-lit VGA screen, a very thin and intelligent user-centric design, and a fleet price of about \$1,500.

The CF-1000 is a fun notebook. In fact, this review is being written on a CF-1000. But its 4MB of RAM—and a design that makes it hard to upgrade—makes it suitable largely for DOS users.

Enter the second model, the CF-580, a 486-25 Mhz machine with 4MB of RAM that can be boosted to 20MB with add-on cards. Either B&W or active color matrix models are available. The 580 offers drives from 120MB to 230MB, a 14,400kbps faxmodem and a PCMCIA Type II slot for LAN adapters, extra memory, and other cards. Cost is in the \$2,500 realm, depending upon configuration. What's more, to keep up with the ThinkPad 750, Panasonic will soon release a model with a removable CD-ROM drive.

After several months of testing and on-the-job use, we can report that with enough RAM and disk space, the 580 readily supports OS/2, and zips through OS/2 applications with great agility.

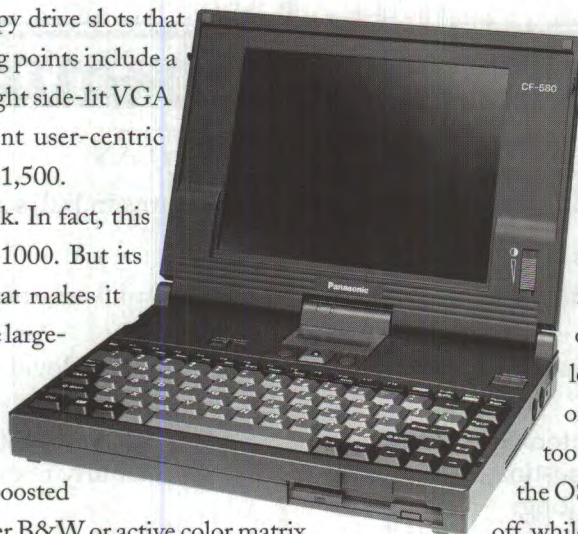
Indeed, using the 580 is a breeze. System performance is excellent. To be unfair, we compared the time needed to perform some simple tasks on the Panasonic laptop to the speed of a 486-66MHz tower. The results show a strikingly fast portable computer. For example, WordPerfect 5.2 for OS/2 loaded in 15 seconds on the laptop, compared to 13 seconds on the tower. A 2.2MB file copied from one directory to another in 13 seconds, compared to 9 seconds on the 486-66. There was no multitasking at the time. Indeed, while the 580 was archiving a two-

million-byte database, it required a full 20 seconds to load Microsoft Word for DOS. The 580 loaded the same program in only four seconds after the disk-intensive compression task was completed.

The 580 has a "resume" function triggered by the on-off switch. Rather than rebooting the system, you just power on and off and the screen picks up right where you left off. Since you cannot effectively use OS/2 on the road without such a feature—it takes far too long to load—this is an essential feature for the OS/2 road warrior. Careful, do not power on or off while the LCD disk indicator is whirring, and allow five seconds for the resume to engage.

With any notebook, a paramount issue is how long the battery lasts. Many of us have been frustrated by battery life claims that were highly exaggerated. The 580 is one of the first notebooks we've tested that manages its power to match the manufacturer's claim. The trick is a handy setup utility that lets you allocate power usage according to your needs. At the DOS prompt, type "setup580" and the program prompts you through a number of configurations, including power management.

When set for maximum power-saving, the system dims the





## HARD DRIVE

screen slightly and executes other miserly regimens that allow more than three hours of usage, depending upon what type of computing you're doing. The program allows you to trade lesser battery life for better performance and more options.

Among the benchmarks by which we test laptops is what we call the Coast-to-Coast Standard: If you board a New York-to-San Francisco flight, how far can you use the notebook on battery power? Assume an East Coast departure and the normal interruptions for extreme turbulence and to chomp peanuts. Under such circumstances, many notebooks tend to kick out somewhere over Ohio. In our test, however, the 580 almost made it to Denver—a three hour, 45 minute flight. (We're still waiting for the critter that will last all the way to the Golden Gate.)

The 580's nickel metal hydride battery recharges fully in only 90 minutes. An LCD battery reader mounted on the dash-board tells the user at a glance how much life is left. The AC adapter is far less bulky than most, so packing it along in

a briefcase for quick plug-ins is no hassle.

The 580 has some quirks and a couple of weak points. The Number Lock has a habit of engaging at will and must be depressed for a full 2 or 3 seconds before it knows you want it gone. The absence of high-resolution graphics means you can't effectively use multiple DOS apps in windowed sessions—a chronic problem for OS/2 use on any notebook.

The weakest point is the 580's built-in trackball. It's hard to use, often takes two hands to complete a drag-and-drop, and the pointer is far from precise. An external mouse solves this problem.

Panasonic seems to have grasped the importance of the OS/2 market and is producing a line of products with the 32-bit crowd in mind. I urge the company to go the next step and either bundle or preload OS/2 on request. The 580 is the best development in laptops since the ThinkPad, and one we highly recommend. ♦

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# The Battle of Visual REXX

Two REXX products use the style of Visual Basic to help you create custom OS/2 apps

BY RICH MALLOY

One of the most important programming products to come onto the market in the last few years is Microsoft's Visual Basic. This innovative programming environment goes a long way toward eliminating the considerable pain of developing custom Windows applications. With a little bit of training, you can develop a Windows application using Visual Basic in a matter of hours.

Of course, we're not going to hold our breath waiting for Microsoft to come out with an OS/2 version.

But as luck would have it, we don't really need such a Microsoft product. The reason? Not one but two companies have seized the opportunity to create a Visual Basic-like product for OS/2. The existence of both products promises to have the same impact on OS/2 as Visual Basic did on Windows.

The two products are VisPro/REXX from a North Carolina startup called HockWare (formerly known as UCANDU Software), and VX-REXX from the Canadian programming powerhouse Watcom. As you can see from their names, the new products eschew Bill Gates' favorite programming language in favor of REXX, a language that is just as easy as BASIC, but one that makes more sense for OS/2.

## The Visual Revolution

The big change that Visual Basic brought to the programming market was that it greatly simplified the process of creating a user interface for your program. Even in a command-line program under DOS, a large percentage of a program's code deals with the user interface. In a GUI such as Windows, the user interface code becomes enormous and requires significant retraining for the programmer. In Visual Basic, the process is almost trivial.

With Visual Basic, a programmer could create a user interface by simply picking objects such as buttons or list boxes from a palette of tools and dropping them on a form. Of course, that's not the end of the story. The programmer must also set the prop-

erties of these objects, such as name and color, and then impart behavior to the objects by writing code. For example, what happens when you click a particular button?

At this point the visual paradigm ends; programmers turn to their BASIC manuals and write code the old-fashioned way. Nonetheless, the great majority of your code—which would normally call and position various Windows objects—has already been written for you.

The basic point to remember about Visual Basic is that for each object, such as a button, you have three specific sets of things associated with it: properties (e.g., position, size, color, value), events to which the object responds (e.g., mouse button clicks, double-clicks), and methods or procedures (e.g., adding an item to a list box, deleting an item).

Adding behavior to an object is a simple two-step process: first, select an event to which that object responds, and second, designate how that event will change that object, another object, or some variable in your program. Underneath all this, of course, remains the algorithm for your program, which still must be coded in the usual way. But that's the fun part; who wants to automate that?

Not the least of Visual Basic's features is its comfortable programming environment. Since you spend most of your time looking up each object to see which properties, events, and methods it supports, Visual Basic provides a sizable amount of reference material both on-line and off. There are also plenty of code examples that can easily be copied and pasted into your application. To further simplify the programming burden, if you enter a line that contains a syntax error, the Visual Basic editor spots it immediately.

Since its introduction two and a half years ago, Visual Basic has not been standing still. Already in its third version, the program has regularly gained new objects, such as a spreadsheet-style grid, and now even includes a database engine for Microsoft's Access database.



## REXX Rules

As good as Visual Basic is, it still suffers from two critical limitations: It runs only on Windows, and it uses BASIC. True, this BASIC has undergone incredible evolution since the first BASIC crawled out of Dartmouth almost 30 years ago; some even call it a new version of Pascal. But whatever you call it, it is still not REXX.

When HockWare and Watcom decided to come out with a Visual Basic-style product, choosing REXX was a no-brainer. First, it was already established by IBM as the user language of choice for OS/2. Not only can it be used as a programming language in the traditional way, it is also the batch programming language for OS/2. And not only can it launch OS/2 applications, it can also control them to some extent. Gates would like to establish BASIC as the common batch and macro language for Windows; REXX is already that language for OS/2.

Stylistically, REXX is similar to BASIC but in many ways better—although it does take some getting used to. Like BASIC, it avoids cryptic acronyms in favor of procedures and functions that are full names. There is only one data type, the string, but it can be used as an integer or floating point number when needed. Arrays and compound variables are handled as variations of each other. And variables, even arrays, need not be declared (a mixed blessing).

File access also follows a characteristically simple model. Files, along with keyboard input and COM port access, are treated alike—as streams. You can easily write a line out to a filename using the LineOut() command. If the file is there, it appends the line; if not, it creates a new file—as easy as that.

Before we get too far here, let me confess that I am not a REXX expert. The approach I take here is as a serious user, basically someone interested in getting a job done as soon as possible.

To test VisPro/REXX and VX-REXX, I tried to implement a small but useful autodialing program that I had previously coded in Visual Basic. The program starts by reading in a list of names and phone numbers from a text file. It then loads these into a combo box. With the combo box, you can either choose a name already on the list, or enter a new one in the entry field at the top of the list. Pressing an **Add** button will add the new name to the list. Likewise, pressing a **Delete** button will delete a name. Pressing a **Dial** button will parse the name, separating out the phone number (which is preceded by a colon). Closing the application will automatically save the names back to a text file.

## VisPro/REXX

This program takes a Visual Basic approach but with a somewhat different design. When you call it up, it presents you with a workspace—a blank form criss-crossed by grid lines at the bottom and an array of objects at the top.

One of VisPro/REXX's strengths is the range of objects available. Of course, there is the obligatory set of buttons, text labels, check boxes, entry fields, and list boxes. But there is also a slider, a value set (offering a palette of color boxes, for example), a spin button (a numeric data box with buttons for increasing and decreasing its value), a Settings notebook, and a business graphics tool for creating simple charts.

Of special interest is a "free form" object with special properties. This object can intercept events—right mouse button down and mouse move, for example—that other objects cannot. According to HockWare, the free form object offers you all the functionality an OS/2 programmer has, but with a simplified interface.

For adding behavior to your objects, VisPro/REXX uses an interesting quasi-visual approach. Say, for example, I want to have the **Delete** button in my test application delete an entry from a combination box. VisPro/REXX provides an "event tree view" of your programming code. This has two windows: On the left is a graphic representation of all the objects in your program and some of their associated events. On the right is the code associated with the selected event of the selected object.

In my case, I would highlight the Button Click event of the **Delete** button. On the right side, a blank window for code will appear. I would then drag the combination box icon on the left to the code window on the right.

Immediately a menu of possible methods would appear. I select **Delete a List Item**, which would insert the following code line along with a comment line explaining the purpose of the line: CALL VpDeleteItem window, "Combo\_1", index

VisPro/REXX already has inserted the name for my combination box into the command. All I have to do now is be sure that the variable index has been set to the right value.

For debugging, VisPro/REXX uses some simple techniques.

### VisPro/REXX 1.1

HockWare, Inc.  
PO Box 336  
Cary, NC 27512-0336  
(919) 387-7391  
FAX (919) 380-0757

**LIST PRICE:**  
VisPro/REXX 1.1  
\$299  
Bronze edition  
\$99



## DOT EXE

When you run a program and it spots a bug, for example, it may pop up a text box with the comment: "Error in line 7: Incorrect procedure call."

VisPro/REXX's documentation is fairly good. The best part consists of two examples of some useful programs. There is also an on-line tutorial that leads you through the creation of a short program. But VisPro/REXX would benefit from an in-depth reference listing of each object along with its associated properties, events, and methods.

Normally, VisPro/REXX has a list price of \$299. But just as we went to press, HockWare announced that it was offering a slightly slimmed-down "Bronze" edition of the software for only \$99. This edition lacks four of the more advanced objects, including business graphics and the notebook.

### VX-REXX

In its general look and feel, VX-REXX is much closer to the Visual Basic model. Its workspace consists of a blank form with a grid indicated by an array of dots. Objects such as buttons and check boxes are arranged on a vertically oriented palette of tools off to the right. The program also uses a menu editor very similar to that in Visual Basic.

As far as properties and programming are concerned, however, VX-REXX is definitely an OS/2 program. Double-clicking on any object brings up a notebook for that object. In the notebook you can specify any of several properties for that object. One page of the notebook is **Events**, where you can program the object. This page presents you with a menu of events that the object responds to. Simply double-click your choice (e.g., mouse click) and write your REXX code.

Among VX-REXX's strengths is its support for graphics. The program allows you to use the usual command buttons and radio buttons, but also offers you two additional choices: graphic command buttons (where a small graphic image could itself be a button), and graphic radio buttons (where a graphic can have a radio button beside it).

Other strengths include the ability to put hints into the bottom margin of each form to help your users fill out the various data items. Also, you can set time-consuming tasks such as long calculations into their own threads so that the rest of your program can continue.

VX-REXX's manual is larger and more detailed than that of VisPro/REXX. It features a good reference section that describes each object, method, property, and event. But like the VisPro/

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## DOT EXE

REXX manual, it could benefit from more code examples. However, the VX-REXX manual includes one particularly strong example: a front end for OS/2's Database Manager. Many REXX programmers will doubtless be building front ends like this and

will find the example very useful.

The manual also contains extensive instructions on how to write OS/2 batch files with VX-REXX.

The debugging features include the ability to set breakpoints in your code, process code one line at a time, or step over procedures. Like VisPro/REXX, VX-REXX does not check syntax until you try to run the program.

When VX-REXX was first released at a list price of \$299, it was given an introductory price of \$99. That introductory price has expired, but the company is now offering a special introductory price of \$199.

### VX-REXX 1.0

WATCOM International  
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Canada N2L 3X2  
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### Bottom Line

Although neither program is as slick and polished as Visual Basic, both programs help you produce good, useful stand-alone OS/2 applications with relatively little effort. Both should be commended for this. And like Visual Basic, neither product is standing still. HockWare says it will have VisPro/REXX version 2.0 out by the end of the year. Watcom says that it will continue to add more objects to its tool palette.

While both products deserve merit, VX-REXX is clearly the more powerful system. Its wide range of features, including the ability to produce hints, threads, and batch programs, raises it to a slightly higher level.

But with either product you can't go wrong. If everybody would use these two products, we'd soon have so many OS/2 apps we would never need to use Windows again. ♦





# Just the Fax

OS/2 would seem to be made for computer-based faxing, and users have a choice of two good packages. But why aren't there more?

BY RICH MALLOY

It is simple logic. The best reason to use OS/2 is its multitasking ability. The best use for multitasking is communications. And one of the best ways to communicate is by fax. So it is only natural to assume that there would be an abundance of fax software for OS/2, right?

Wrong.

The fact is that fax software is like many other software categories: The Windows offerings dwarf the OS/2 assortment. Well, OK then, you might say, we can run a Windows package. But Windows just doesn't have the same multitasking infrastructure that OS/2 does. Using Windows fax software on OS/2 is like driving a family sedan on the no-speed-limit Autobahn. Yes, it's comfortable, and it gets you from Point A to wherever, but somehow you feel you are missing something.

But while there is not an abundance of OS/2 fax software, there is no dearth either. There are, in fact, two good fax software packages, and the competition between these two products is intense. They have practically the same price, and at one point, they even had almost the same name! Like all such competitions, the winner eventually is us, as each company strives to outdo the other with a better and better product.

The first product, FaxWorks, from SofNet in Atlanta, Georgia, was covered in these pages last May. FaxWorks has gone through a number of name changes. The first was PMFAX; then, for a reason that will become obvious in a few paragraphs, the company switched the name to FaxIt. Finally, the current name was chosen, and according to another *OS/2 Professional*, Herb Tyson, FaxWorks works well indeed.

Going chin to chin with FaxWorks is an import from France. It's not often we have the pleasure of seeing software being imported into the U.S.A. But when we do, it often has some rela-

tionship with OS/2—perhaps because OS/2 is a more internationally accepted operating system.

Anyway, the import in question is Fax/PM from a company called Microformatic, which has been developing OS/2 software since 1987. Here in the States, Fax/PM is sold by a Connecticut company called American TeleRep. The price is \$150—a dollar more than FaxWorks. Last April, Microformatic came out with version 2.2 of Fax/PM, the first full 32-bit version.

Anyone who tested the beta version of OS/2 2.1 may remember seeing a stripped-down applet version of Fax/PM. This version could send or receive only one page. At the last moment, IBM decided to cancel this applet because of user requests for a full-powered version and because it entailed adding an extra floppy disk to the installation kit. The applet is still available on an OS/2 CD-ROM Toolkit.

## Better Than a Fax Machine?

Before we get too involved with Fax/PM, let's examine why you need fax software in the first place. Unless you just arrived on a MiG from Havana, you probably already have a fax machine, or at least have access to one. For general purpose communications, it's hard to beat a fax machine.

Hard, maybe, but not impossible. That is especially true if you want to send a fax again later in the day, or if you want to send the same fax to five or more people, or if you would like to have your incoming faxes printed on decent paper. You can get a high-end fax machine to do all of these things, but a much more cost-effective solution is to use a fax modem and a good quality fax software package.

Even if the costs were comparable, the images sent by a fax modem are strikingly better than those sent by even the best fax machine. The reason? The bad quality of most fax messages is



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## CONNECTIVITY

due not to the thermal printers or to phone line noise, but to the low-quality scanner inside the sending fax machine. And even good scanners are subject to dirt, paper jams, and crooked pages. By contrast, a fax sent by fax modem can make even a low-quality fax machine produce pages that almost rival a laser printer.

If nothing else, a fax modem saves you from the annoying process of printing a letter and then faxing it—a waste of time, toner, and paper.

One of the added benefits of having a fax modem and a fax machine is that you now have, in effect, a plain-paper copier and a scanner. To copy something simply fax it to your fax modem and have your fax software direct the fax to your laser printer. If you need to scan an image into your computer, fax it to your fax modem and then save the image in any of the popular graphics formats.

### Modular Approach

Fax/PM says it does a lot, and then does it. You can fax directly from any OS/2, Windows, or DOS app; you can receive in background; and you can even access Fax/PM from your own custom programs.

Fax/PM uses a simple, modular approach. It basically consists of two programs: a scheduler, for sending and receiving faxes, and a viewer, for viewing and printing faxes. There are also two folders, FAXIN and FAXOUT, which store faxes waiting for transmission or viewing. If you don't like the default folder setup you can store these faxes anywhere you want. Fax/PM does not offer fancy features such as inserting signature images into faxes. These tasks are relegated to other applications.

Compared to a slick, polished consumer product such as Delrina's WinFax Pro for Windows, Fax/PM seems a bit coarse. But it is aimed at a different market. Fax/PM is more like a powerful, industrial-grade tool designed for no-nonsense utility. For example, WinFax Pro offers optical character recognition and stylish icons. But if you want to fax from a DOS application, you have to install a memory-resident program, gobbling up valuable memory. As an OS/2 app, Fax/PM offers DOS apps almost a full complement of memory.

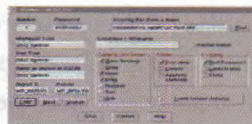
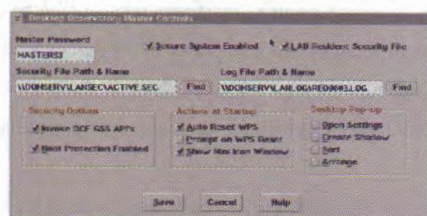
Fax/PM is not content to be outdone by products such as WinFax Pro. By the time you read this, Fax/PM will support optical character recognition. Microformatic will offer a \$49 OCR add-on developed by Recognita. Unfortunately, this add-on was not available at press time.

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### "What You Print Is What You Fax"

In Fax/PM, sending a fax is relatively straightforward thanks to two special printer drivers: an OS/2 driver called "WYPIWYF" (what you print is what you fax), and a Win-OS/2 driver for Windows applications. To your applications, these look like regular printer drivers. When I was ready to fax, I simply printed a file and selected the fax driver rather than my usual HP LaserJet. The driver then displayed a dialog box asking me to whom I would like to send the fax and when. After I indicated my preferences, the driver generated a fax file and put it into a queue.

Note that for the fax to actually be sent, the Fax/PM Scheduler program must be loaded and running in background, a fact that somehow was not immediately obvious to me and led to a few frantic moments. (If you want your fax modem on line at all times, you could add the Scheduler to your startup folder.) Also note that before you can fax from a Windows app, you must run Fax/PM's Win-OS/2 DDE Server, another crucial point that was not immediately obvious.

I experienced one minor glitch here. When I sent faxes from Microsoft Word for Windows, the program functioned beautifully. But when I sent faxes from OS/2's Enhanced Editor, the program would add an extra blank page at the end of the file for no apparent reason.

For DOS apps such as my copy of XyWrite, the procedure is just slightly more complicated. Fax/PM emulates an IBM Proprinter, and you can select the LPT port on which the driver will reside. Most users will probably select LPT3, and faxing is as simple as printing to that port.

Not so simple is the driver's dialog box, which asks you where you would like to send the fax. This dialog box will appear on the OS/2 Desktop—out of sight from a full-screen DOS session and without any indication that it is there. If you remember to Ctrl-Esc to the dialog box, though, all is fine.

One of Fax/PM's neat features is its support of OS/2's Workplace Shell: An alternate way of sending a fax is to drag and drop a file onto the Scheduler icon.

### Receiving

Receiving a fax is relatively easy. Just turn on the automatic fax reception mode in the Fax/PM Scheduler's notebook and then minimize the Scheduler. When a fax comes in, the caption of the Scheduler's "smart icon" will keep you apprised as the fax is received. You can also have incoming faxes sent directly to any of

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## CONNECTIVITY

several printers, which of course is a nice way to get plain-paper faxes.

Faxes printed by Fax/PM are a little smaller than the original document (there is a 15 percent reduction horizontally and a 10 percent reduction vertically). This makes room for a small footer that Fax/PM adds, indicating the name and the location of the fax file related to this printout.

To view a received fax, you use the Fax/PM Viewer. The fancy method is to drag and drop a fax icon onto the Viewer icon. With the viewer you can either pan around a greatly enlarged view of the fax image or see a reduced image of the entire fax. The viewer does not let you store the fax as a standard graphics file format, such as .BMP, but you can select part or all of a fax image and copy it into the OS/2 Clipboard.

One of the unique features of Fax/PM is its Application Programming Interface for programmers. If you are a programmer and want to endow your programs with the ability to send fax messages, you can access Fax/PM either through OS/2's System Object Model (SOM) or via REXX commands. One company has already made use of this feature to enable its mainframe computer to send faxes through a networked OS/2 system.

### Quirks

Every program, especially one with such far-reaching goals as Fax/PM, will have quirks. For example, the documentation is written in a relaxed, informal style, but sometimes the wording is awkward. Occasionally, curious phrasings appear that remind you of the program's French origin. My favorite: "The Files Send a fax option is the beating heart of the Scheduler."

Fax/PM includes drivers for both OS/2 and Windows. These drivers generate dialog boxes that ask you where you would like to send a particular fax. For some reason, the dialog boxes for the OS/2 and Windows fax drivers are different; the OS/2 driver lets you attach a cover page, for example, but the Windows driver does not. Furthermore, while you can use the dialog boxes to choose a fax number from your phone book, you cannot add new numbers to the phone book—that can only be done in the Scheduler.

Although the Scheduler's caption alerts you to the current activity, it does not indicate whether any faxes were received while you were away from your desk. Perhaps a future version will indicate not only the program's status but also how many faxes have been received. In the meantime, there are two ways around the problem. First, you can keep the FAXIN folder (or whatever



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## CONNECTIVITY

folder you designate to receive incoming faxes) open and visually see how many faxes are there. Alternatively, you can copy into the FAXPM directory a special DLL that will display new faxes as they come in.

One item on my wish list has to do with file naming: Most fax apps deal out numeric names for fax files. For outgoing faxes, Fax/PM uses a serial approach, starting at "00000001.FAX." Incoming faxes are assigned names related to the date and time (e.g., "10311800.FAX" for 6 pm on Halloween). It would be better if fax software were to designate more descriptive names, perhaps based on the initials of the recipient (or sender for received faxes). For example, a fax to Bill Clinton might be called "BC000026.FAX." A fax received from IBM Corp. would be "IC000027.FAX."

### Bottom Line

Faxing, whether by fax machine or fax modem, is still more of an art than a science. Seemingly random glitches pop up occasionally to ruin a transmission. And despite advances in fax modems and fax software, fax machines are not about to go obsolete in the

near future. Still, a good combination of fax software and a fax modem greatly expands the ways in which your system can interact with the outside world.

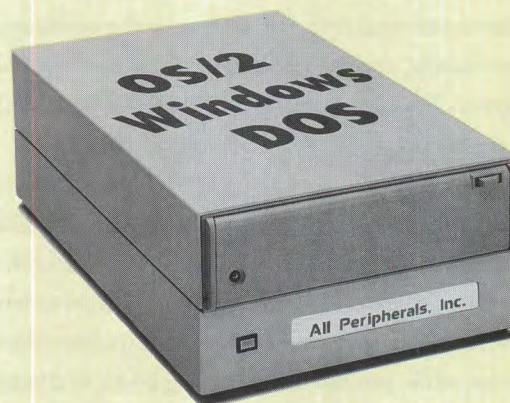
Microformatic's Fax/PM is a useful piece of software. It has a rough edge or two, but no more than you would expect on a powerful industrial-grade tool. If you're interested in communications (and who isn't?), give this product a very close look. ♦

**FAXWORKS** SofNet  
110 North Chase Parkway,  
Suite 150  
Atlanta, GA 30067  
(404) 984-8088  
FAX (404) 984-9956

**FAX/PM** American TeleRep, Inc.  
PO Box 654  
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Circle #78



## INPUT

*continued from page 23*

doing a few articles on it? Also, you seem to write many articles about what is going on today with IBM and OS/2; how about some more articles on where the two are going tomorrow?

**Chris Cioffi**  
*MCI Mail*

### Letters to IBM

I do hope you don't believe what IBM tells you or what the new "big shot" tells the newspapers. A recent ad is the newest IBM joke on us and themselves. It advertises DOS 6 & Windows installed. OS/2 is not available on this IBM product.

I am writing this letter by hand because both of my "true blue IBM P/S2" mod 80s are in for repair. Walk-in repair for these fine products is over 150 miles away from the home of both Microsoft and Boeing.

Perhaps when the reviews say OS/2

is three times as good as any DOS/Windows competitor and the upgrade costs \$9.95 or less I'll take the seven hours and tech support to install it again.

**H.O. Woog**  
*Seattle, WA*

Wow! What a system this OS/2 is. I have been a Windows user for decades, or since 2.0 I guess. I was afraid of it too! I am a self-trained MS-DOS man.

Last year I got the 2.0 version of OS/2. I ran into so many problems that I gave up the installation and went back to the old Windows way of doing things. Then I saw that IBM had a \$30 rebate for OS/2, so I went out and got the new version 2.1. Now I'm freaked. It's like, "Eat your hearts out, Windows fans." It's either "upgrade now or upgrade later."

I did have fear during installation. I even used the manual. This IBM cor-

poration needs to sit 100 Windows users down in front of a PC and ask them to write down all of their questions (and fears) during the installation, then publish them in a hard copy and put that into the box the program came in.

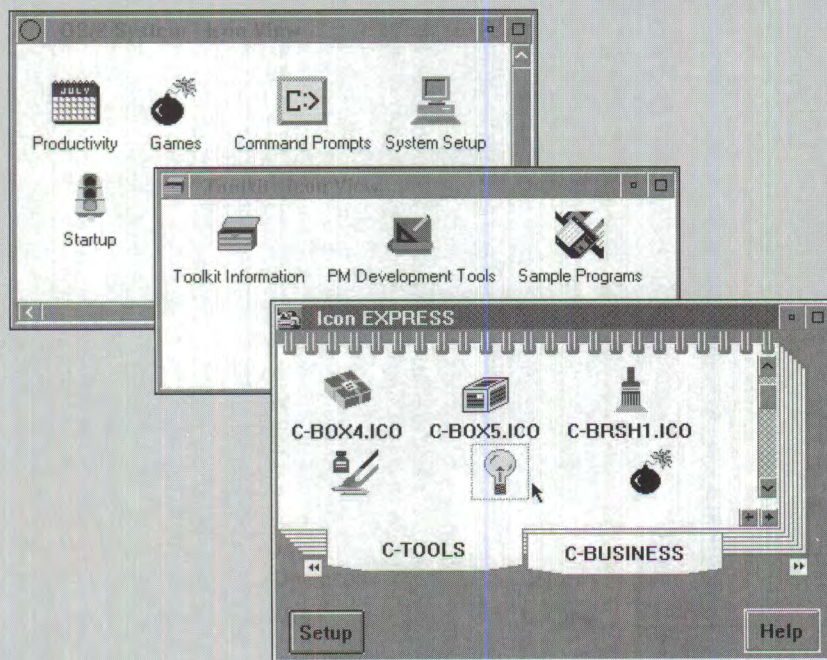
Finally, I reformatted both hard-drives and installed from the beginning. It was worth the effort! I kept the Windows 3.1 version on the C:\ just in case I got irked at OS/2. Now I guess I will always have it around just for "the memories," something like the old PC-Write program hanging on the wall.

**Bob Deming**  
*Tucson, AZ*

I upgraded from OS/2 2.0 to 2.1 over the 4th of July weekend. After having used it for nearly three months, I believe this product can be recommended to others. With qualifications.

*continued on page 93*

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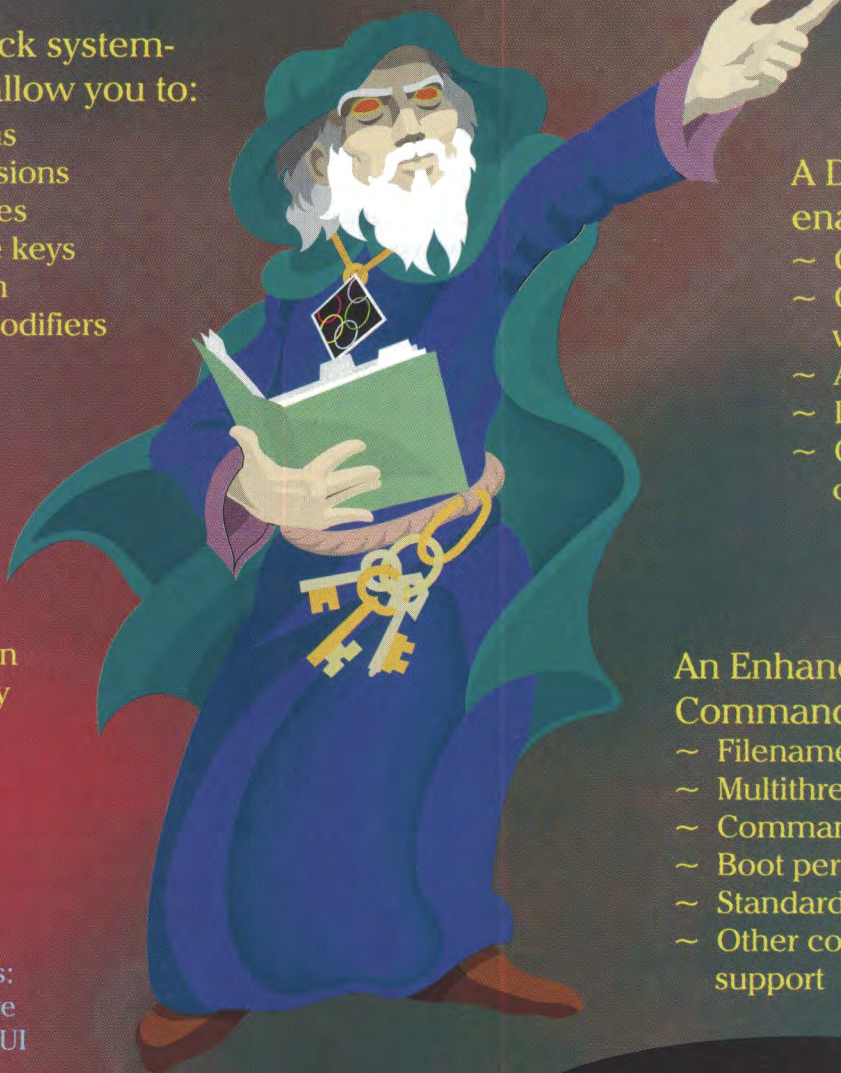
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## MARKETLINE

Product News for the OS/2 User

# SCOOPS

## IBM readies Ferengi raid

IBM will ratchet up its marketing assault on the Windows crowd in a big way with a secret new OS/2 product code-named Ferengi (for the irascible commercial raiders seen on *Star Trek*). The package will not be a mere front-end GUI, but a

fully functioning OS/2 that will be virtually indistinguishable from the packages installed by OS/2 users, reliable sources told *OS/2 Week*.

The as-yet-untitled product is designed to install easily on top of DOS and Windows as an upgrade to

Windows 3.1. It will allow current Windows users to easily adopt the OS/2 operating system without giving up their existing configurations.

Ironically, Ferengi will still require between 15 and 17 diskettes.

IBM has not finalized a price for the product, but \$49.95 is being actively considered. Ferengi is still in beta, but Big Blue is rushing the product to be ready for a Comdex announcement.

## New Products

### Stop cursing your cursor

Here's a great Christmas present for the computer overuser. Called CursorPower and priced at \$49.95, this software changes the size and/or shape of your OS/2 cursors. That means no more straining trying to find that little arrow hiding somewhere on the screen. You can change your pointer, wait, text, or sizing cursor into any of more than 100 arrows, symbols, signs, musical notes, hand signals, or other designs supplied with the software or a design you create on-screen or import.

North Shore Systems Inc., P.O. Box 8687, Incline Village, NV 89450-8687, (702) 831-1108, fax (702) 831-8553.

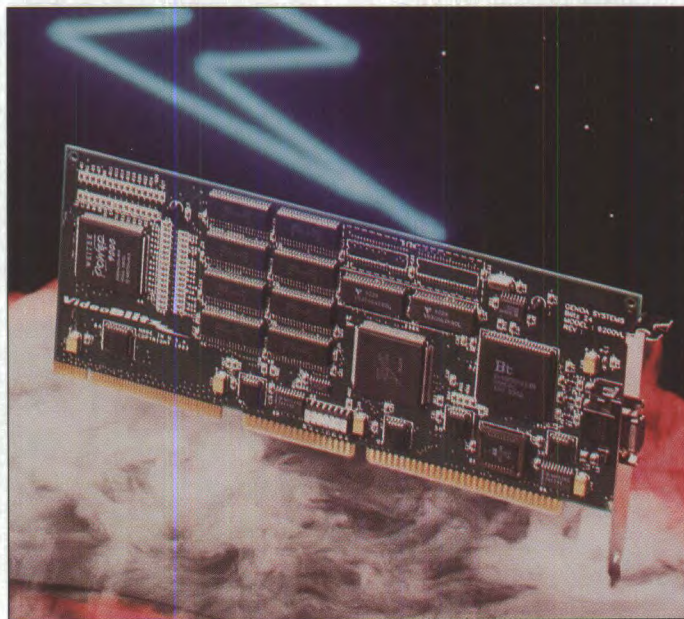
### VideoBlitz from Genoa

Genoa Systems Corporation is shipping VideoBlitz, a high-performance VESA Local Bus graphics accelerator for OS/2, Windows, and AutoCAD.

Based on the Weitek P9000 GUI accelerator chip, the card has 2MB of VRAM and can deliver non-interlaced color at resolutions up to 1,600x1,200. The VideoBlitz also delivers "True Color" (16.8 million

colors) at 800x600 resolution. The \$549 list price of the VideoBlitz includes a two-year warranty on parts and labor.

Genoa Systems, 75 E. Trimble Road, San Jose, CA 95131, (408) 432-9090, fax (408) 434-0997.

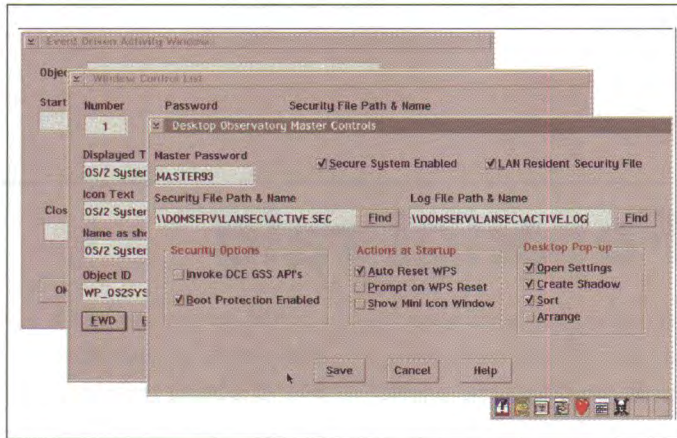


Genoa System's VideoBlitz Graphics Accelerator Card (9200VL)

### LAN administration tool for OS/2

Desktop Observatory 3 from Pinnacle Technology Inc. promises to be a player in the OS/2-based LAN administration market. Operating independent of machine type or network operating system, the software enables an administrator to configure any desktop from a central location. Thereafter, each user's customized desktop appears at log-on at any network workstation. This "mobile desktop" provides a flexible work environment





while retaining system-wide and individualized security.

Desktop Observatory 3 brings a wealth of security features to the OS/2 desktop as well. Event-driven password protection is available using internal or GSS DCE APIs. The software also makes it possible to restrict reconfiguration of the desktop and access to specific applications or utilities.

To round out the package, Pinnacle has provided additional client functionality on the OS/2 desktop.

Desktop Observatory 3 is available until Comdex at a special introductory rate of \$149 per workstation, with site licenses available.

Pinnacle Technology Inc., P.O. Box 128, Kirklin, IN 46050, (800) 525-1650, fax (317) 279-5157.

## New printers for Lexmark

Lexmark has shipped six new printers aimed at the desktop and forms markets.

Of the six, the two most innovative are the IBM 4037 5E and the ExecJet II. The IBM 4037 5E (\$799) is a five page-per-minute LED printer designed for users who are primarily text-oriented with occasional graphical needs. Competing with Hewlett-Packard's Laserjet 4L in price and performance, the IBM 4037 5E is designed for a 16,000 page-per-month duty cycle.

The IBM ExecJet II (\$349) is IBM's new entry in the hot desktop inkjet printer market. It offers affordable fine printing of text and graphics at 600x300 dpi.

The four other printers are 2300 series 9-pin and 24-pin dot matrix printers designed for multipart forms and labels. Standard and wide carriages are available. The dot matrix printers range in price from \$399 to \$549.

Lexmark International, 740 New Circle Road, NW, Lexington, Kentucky 40511, (606) 232-2000, fax (606) 232-5317.

## Getting Optical with DPI

Backup media are maturing in capacity and flexibility to match the needs of more complex computing environments and larger files. One of the latest steps forward is the Rewritable Magneto Optical Drive (RMOD), a high-capacity portable drive.

Analog & Digital Peripherals, Inc., based in Troy, Ohio, has just released the newest addition to its One For All line, the 3.5-inch RO128 RMOD. Connectible via either parallel printer or SCSI interface port, the RO128 offers a seek time of less than 28msecs and conforms to ANSI and ISO standards.

Since it's portable and the disk is removable, one RO128 unit can service a number of workstations, Macs, and PCs.

The unit weighs 5.5 pounds and the 128 megabyte optical disks have a guaranteed shelf life of 30 years.

The RO128 RMOD comes self-contained in a case with a carrying handle, and is supplied with software to back up OS/2, DOS, System 7, or Novell LANs. The system, with one software package and one rewritable optical disk, sells for \$1,495; additional disks cost \$49.

ADPI, P.O. Box 499, Troy, Ohio, 45373, (513) 339-2241, fax (615) 339-0070.

## Mail call

One of the more interesting multimedia messaging suites for OS/2 is now available from VoxLink Corporation.

VoxLink makes products that integrate e-mail and



The RMOD from ADPI is ideal for users with multiple, large capacity files.



## MARKETLINE

voicemail: VoxLight for the Octel Voice Mail system and a five-product package, VoxServer, that interfaces with cc:Mail, Microsoft Mail, or other MHS-based applications.

VoxLight, which works with Octel and Rolm voice mail systems, monitors incoming e-mail and notifies the user via voicemail when a new message arrives. VoxMail converts cc:Mail messages into synthesized speech messages accessible from a touch-tone phone. VoxVoice lets users send voice messages over the cc:Mail system as digitized attachments that can be heard by the addressee by phone. VoxFax allows a user to direct the contents of his or her cc:Mail mailbox to a fax machine. The fifth tool, VoxAlert, automatically notifies a pager when a new

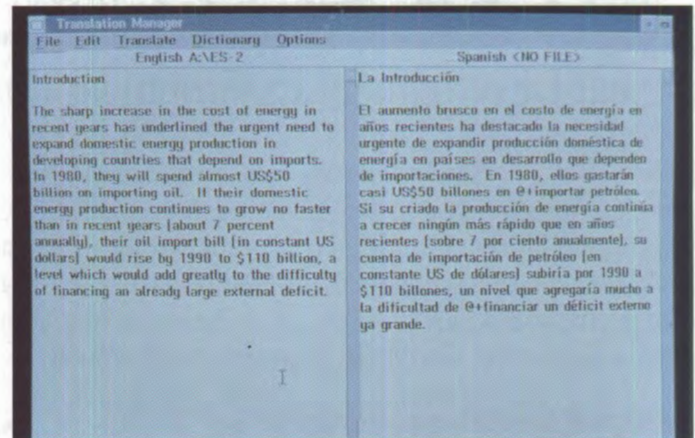
e-mail message arrives.

The system is OS/2-compatible and requires a dedicated IBM compatible computer with a network card and 640K of memory. VoxLink modules start at \$5,000 for an unlimited number of users.

VoxLink Corporation, 1015 Hickory Oak Hollow, Roswell, GA 30075, (404) 518-1920, fax (404) 518-1946.

### Parlez-vous francais? Mais oui!

An average human translator can convert 6,000 words a day from a foreign language to English. The new Power Translator Professional for OS/2 from Globalink, Inc., however, can translate 20,000 words an hour to or from French, German, or Spanish. The software reads ASCII text of any length, with or



without distinguishable punctuation.

Assuming all the foreign words are in the 250,000-word dictionary, the Power Translator Professional provides, on average, a translation accuracy rate of 90 percent. It is the only translation software available for OS/2 and, with the multitasking capabilities allowing many translations simultaneously, the product is

especially powerful on the OS/2 platform. The company suggests it is particularly useful for bilingual education companies, multinational firms, and publishers.

Power Translator Professional is priced at \$1,195 for a five-user license.

Globalink, Inc., 9302 Lee Highway, Fairfax, VA 22031, (703) 273-5600, fax (703) 273-3866.

## News

### 50/50 and IBM

Seeking to turn a capacity requirement into a marketing advantage, IBM and 50/50 Electronics, a memory manufacturer, have joined forces to market a bundle package that combines 50/50 SIMM memory modules with OS/2 2.1. The OS will be offered on 3.5-inch floppy disks and CD-ROM and will be available with 4MB, 8MB, and 16MB SIMM modules.

### SII files for Ch. 11 protection

Systems Integrators Inc (SII) of Sacramento, California, once a market leader in newspaper editorial and composition systems, has filed for Chapter 11 protection because "no satisfactory agreement could be reached with the company's bank group to reduce the long-term debt" and finance future growth, according to a Sept. 22, 1993, letter signed by the company's CEO and CFO. SII plans to continue to operate as its debt is restructured.

### New Publication

NaSPA, the Association for Corporate Computing Technical Professionals, has launched a new monthly magazine for its members entitled PC Systems and Support. The publication is devoted to business users of DOS, Windows, OS/2, Unix, and LAN software and hardware. The first issue was available in October. For more information, contact NaSPA at (414) 423-2420 ext. 116.

### Sytron partners with Merisel

Sytron Corporation, a developer for OS/2, DOS, Windows, and NetWare backup software, and Merisel, Inc., a distribution company based in El Segundo, California, have formed an alliance. One of the many products developed by Sytos is Sytos Plus for OS/2, a client/server network backup product. Merisel is the world's largest publicly held distributor of software and hardware products. ♦



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**Powerful Open Environment** Enjoy the simplicity of event-driven programming together with the global editing capabilities essential for professional project management. WATCOM VX•REXX is open and extensible through IBM's object oriented System Object Model (SOM) technology. You can access all standard REXX API's including DB2/2, because VX•REXX is based on the OS/2 2.x standard system REXX.

### Interactive Debugging

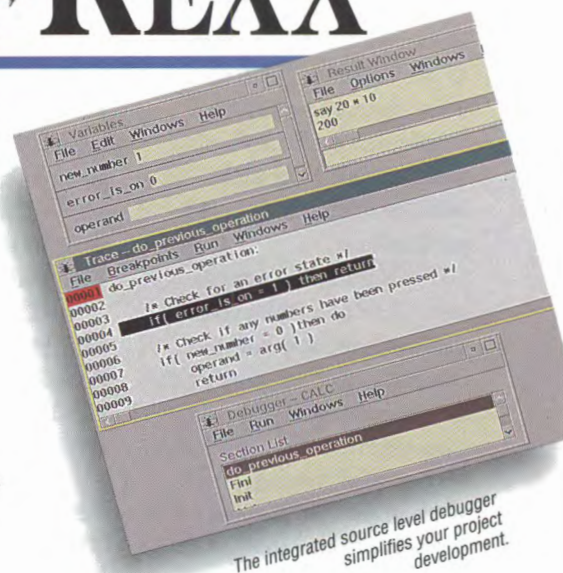
If an error occurs at run-time, VX•REXX will display a traceback pinpointing the source line where the error occurred. A simple click of the mouse will return you to the source edit window to correct the error. The built-in interactive source-level debugger lets you set breakpoints, step through code and watch variables to track down complex problems.

### Build Professional Applications

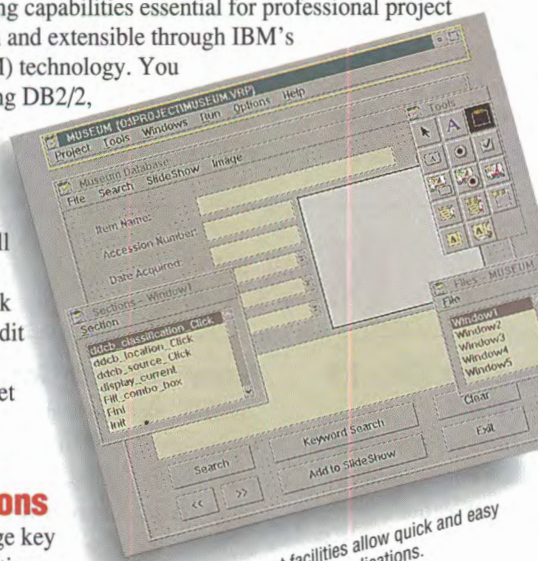
WATCOM VX•REXX allows you to leverage key OS/2 features to create professional applications. Build applications that dynamically create and modify CUA'91 screen objects at both edit and run-time, and include OS/2 style help and hints.

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The integrated source level debugger simplifies your project development.



Project management facilities allow quick and easy development of your OS/2 applications.

### Highlights

- ▶ Easy to use visual development environment
- ▶ Drag-and-drop programming
- ▶ Create and modify objects dynamically at both edit and run time
- ▶ Powerful project management facility
- ▶ Advanced interactive source-level debugger
- ▶ Package your applications as EXE files or PM macros
- ▶ Access to standard REXX API's including DB2/2
- ▶ System Object Model (SOM) based object manager
- ▶ Support for multi-threaded applications
- ▶ Include OS/2 style help and hints in your applications
- ▶ Supports SAA CUA'91 objects
- ▶ Integrated console window support for existing REXX programs
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# Now that I have C++...

BY DAVID MOSKOWITZ AND CHRISTOPHER WEES

If you've ever tried using the C++ features tacked onto the latest version of your C compiler, you've probably discovered that C++ is a more complex language than plain C. Most of the people who buy C++ compilers end up using them to write better C. They may even begin to write C programs with class (pun intended).

As we said last month, the C programmer already knows much of the syntax for C++. The fundamental data types, operators, expressions, and control structures are the same. In fact, it is possible to write a program for a C++ compiler that looks exactly like traditional C.

This approach to C++, however, misses a world of opportunity and possibility to upgrade skills and techniques to a more productive level. This month we'll take a look at a simple OS/2 Presentation Manager program written in C and C++ to understand why, if you have C++, you should give it a try—you just might like it.

The first program that most programmers write in a new language is usually something akin to the famous "Hello World" example first used in the Kernighan and Richie treatise. Listing 1 shows a simple example for the OS/2 Presentation Manager written in C.

If you've ever written a PM program you should recognize the structure. In their simplest form, all PM programs written in C have basically the same layout. A main routine initializes the Presentation Manager, which calls the required Application Programming Interfaces (APIs). In C Programs, these APIs take the form of **Win...**, and include the required **WinInitialize**, **WinRegisterClass**, and **WinCreateMsgQueue**, among others.

After initializing the environment, the program must register one or more window procedures (through the **WinRegisterClass** API). PM calls the window procedure(s) to handle messages addressed to any window that is an instance of this window class. (Note that

## LISTING 1

### Sample Hello World program in straight C

```
#define INCL_WIN
#include <os2.h>
#include <stdio.h>
#include <stdlib.h>
#include <string.h>

#include "dialog.h"
#include "demo.h"

INT main ( VOID )
{
    HAB      hab;
    HMQ      hmq;
    ULONG    ulFlags ;
    HWND     hwndFrame ;
    HWND     hwndClient ;
    BOOL     bReturn ;
    QMSG     qmMsg ;

    hab = WinInitialize ( 0 ) ;

    WinRegisterClass ( hab, CLS_CLIENT,
                      ClientWndProc, CS_SIZEREDRAW, 0 ) ;
    hmq = WinCreateMsgQueue ( hab, 0 ) ;

    /*
    ** FCF_TITLEBAR | FCF_SYSMENU | FCF_MENU |
    ** FCF_SIZEBORDER | FCF_MINMAX |
    ** FCF_ICON | FCF_ACCELTABLE | FCF_SHELLPOSITION |
    ** FCF_TASKLIST
    */

    ulFlags = FCF_STANDARD && ~(FCF_ICON |
                                FCF_SHELLPOSITION |
                                FCF_MENU);

    hwndFrame = WinCreateStdWindow ( HWND_DESKTOP,
                                     WS_VISIBLE,
                                     &ulFlags,
                                     CLS_CLIENT,
                                     "Titlebar",
                                     0L,
                                     NULLHANDLE,
                                     0,
                                     &hwndClient ) ;

    if ( hwndFrame != NULLHANDLE ) /* start msg pump
                                    if we get a window */
    {
        while (WinGetMsg ( hab, &qmMsg, NULLHANDLE, 0, 0 ) )
            WinDispatchMsg ( hab, &qmMsg ) ;

        WinDestroyWindow ( hwndFrame ) ;
    } /* endif */

    WinDestroyMsgQueue ( hmq ) ;
}
```



## CODE CACHE

```
WinTerminate (hab) ;
return 0 ;
}

MRESULT EXPENTRY ClientWndProc(HWND hwnd,
                                ULONG ulMsg,
                                MPARAM mp1,
                                MPARAM mp2)
{
    PVOID pvSaveBlock;

    switch ( ulMsg )
    {
        case WM_CREATE:
            /* load the strings from
             the resource file, here */
            break;

        case WM_PAINT:
        {
            HPS hps; /* Presentation space handle */
            RECTL rec; /* Window rectangle */
            pvSaveBlock = (PVOID) WinQueryWindowULong
                (hwnd, QWL_USER);

            hps = WinBeginPaint( hwnd, (HPS)NULL, &rec );
            WinFillRect( hps, &rec, SYSCLR_WINDOW );
            WinDrawText(hps, strlen((PSZ)pvSaveBlock),
                (PSZ) pvSaveBlock,
                &rec,
                0L,
                0L,
                DT_CENTER | DT_VCENTER |
                DT_TEXTATTRS );
            WinEndPaint( hps );

            break;
        }

        default:
            return WinDefWindowProc ( hwnd, ulMsg, mp1, mp2 ) ;
    } /* end message switch */

    return MRFROMSHORT ( FALSE ) ;
}
```

### LISTING 2

#### Sample Hello World in C ++

```
// include the required headers
#include <iapp.hpp>          // For the IApplication class
#include <istatxt.hpp>       // The IStaticText class
#include <iframe.hpp>        // The IFrameWindow class

#include "demo.hpp"         // our main window class
                             // header def
#include "demo.h"           // our symbols

// the main procedure
void main()
{
    Hello mainWindow (ID_MAINWINDOW); // Create the window
    IApplication::current().run();     // ... and run it
} /* end main */

//*****
```

the nomenclature can become confusing. Both PM programming and C++ use the term "class," but in different contexts.)

As we add more functionality to the C program, we expand the switch statement in the window procedure to handle the new behaviors. However, as the program expands, the switch statement can become unmanageable due to sheer size. Typically, we would write additional functions to improve readability. If we're really conscientious, we would use a style that aids readability and understanding. In addition, we could also work on making the code easier to debug while we write it.

If you write many OS/2 applications, you've probably developed a skeleton application with the basic structure of listing 1, with a few additions for your standard menus and functions. Every time you write a new PM application, you start with your skeleton application and extend it as needed.

This approach has several advantages. First, the skeleton code can be several hundreds lines long, so it saves programming time. Second, the code doesn't have to be debugged (once you get the kinks out). Finally, the source files can form the basis for as many new programs as are needed. The only drawback is the need to go back and constantly edit the original boilerplate file every time you add a new feature. Any time you edit or change source code there is always the possibility to introduce bugs.

Once you make the commitment to use C++ (the language, not just the compiler) you can do things differently. The core of your development work will be based around the class library rather than a skeleton program. For example, with IBM's C Set ++, the IBM User Interface Class Library (UICL) becomes the basis of OS/2 development work. This library encapsulates the user interface API to the extent that you no longer need the IBM OS/2 Toolkit (and its associated header files) to create the user interface for your OS/2 PM applications.

The program in listing 2 uses the UICL to create a "Hello World" program with the same behavior as the one for listing 1. However, if you compare the two listings you'll see they bear little resemblance to each other.

The main routine in the C++ example is only two



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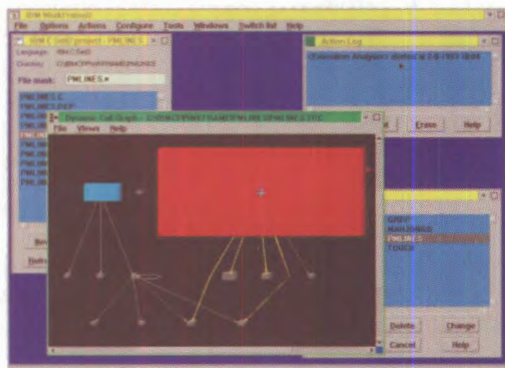
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## C Set ++

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## CODE CACHE

```
// This is the constructor for the window
//
// Essentially the application is little more than a
// declaration and a constructor.
//*****
Hello :: Hello(unsigned long windowId)
        : IFrameWindow (IFrameWindow::classDefaultStyle,
                        windowId)
{
    hello=new IStaticText(IST_HELLO, this, this);
    hello->setText("Hello C++ World!");
    hello->setAlignment(IStaticText::centerCenter);
    setClient(hello);

    setFocus();
    show();
}
```

### LISTING 3

#### Sample File Dialog in C ++

```
//This function requires the following class header files:
/*
#include <ifiledlg.hpp>      //The IFileDialog class
#include <iwindow.hpp>      //The IWindow class
#include <istring.hpp>      //The IString class
*/

//*****
```

lines. Also, a close inspection of the code doesn't reveal a single OS/2 Presentation Manager API. Finally, the large switch statement in the window procedure of listing 1 is also missing. In fact, so is the window procedure!

The code structure we've come to associate with a PM program isn't valid using the IBM UICL. The class library encapsulates the user interface functions of the PM program. So our main window subclasses a frame window (IFrameWindow). The frame window defines a general set of behaviors; the code in the Main-Window function defines the specific behavior for our main window. This becomes the pattern we use to write object-oriented programs using the UICL. We use the classes and methods supplied and extend or modify their behaviors to cover specific cases.

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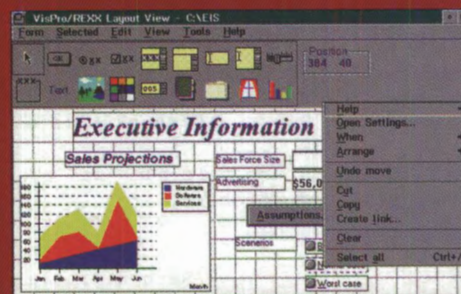


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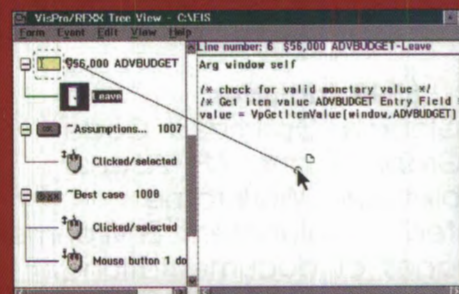
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Circle #84



## CODE CACHE

```
// Hello :: openFile()
// Open file dialog - member function of Hello
//*****
IString Hello :: openFile()
{
    IFileDialog::Settings fdSettings; //New instance
    //Set default values for our file dialog
    fdSettings.setTitle("Hello files"); //Dialog title
    fdSettings.setOKButtonText("SELECT");//OK button=select
    fdSettings.setFileName("hello.*"); //FileName=hello.*

    //Create File Open Dialog:
    IFileDialog fd((IWindow*)desktopWindow(), //parent is
                  // the desktop
                  (IWindow*)this, //owner is self
                  fdSettings); //with our settings
    IString filename=fd.fileName();
    if (fd.pressedOK()) //Check if SELECT (OK)
    { //button was pressed
        if (filename.size()) //Check size of filename
        {
            //User pressed SELECT and file name was chosen
            //check for existence, process, etc...
        } /* endif */
    } /* endif */
    return filename; //Return file name
} /* end Hello :: openFile() */
```

capability. The library is CUA '91 compliant, ensuring that user interface objects maintain a consistent "look and feel." In addition to the interface classes, the library also supports DDE and DLLs, along with exception handling and threads.

Delving into the on-line documentation provided with the UICL, you'll find all the pieces of the user interface puzzle that are present in PM programs. There are classes for basic windows (IFrameWindow in listing 2), viewport windows (with on-demand scroll bars), pull-down and pop-up menus, several types of buttons and check boxes, slider controls (including a "progress indicator" version), and a host of text display and editing tools.

Additional classes provide a multitude of control and formatting functions. Various flavors of cursor classes access elements of their parent classes. An Accelerator class implements shortcut keys (such as assigning a file save function to the F2 key). Classes for

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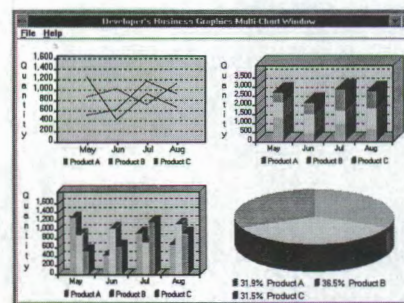
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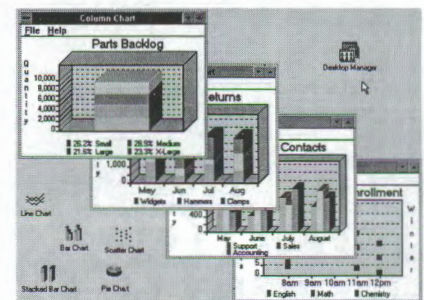
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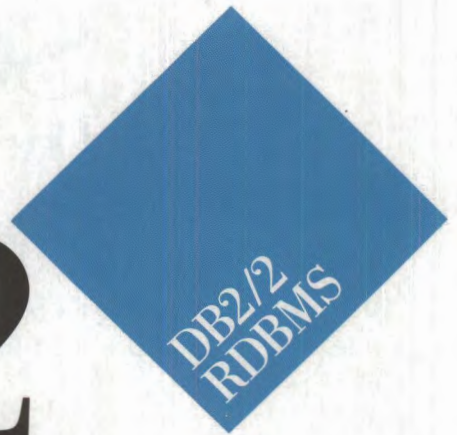
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## CODE CACHE

colors and fonts provide the means to query and manipulate elements of the user interface. Even mouse clicks are encapsulated in event and handler classes.

Child controls are formatted within a window using a number of classes. Text objects created from the static text control class (IStaticText in listing 2) maintain their relative position regardless of the parent window's size. The status line area of a window is also defined using a static text object. Another common window extension, the information area, is constructed from its own specialized class. (Both of these areas are set up by declaring them in a window class definition and specifying instances in its constructor.) The canvas classes, however, are among the most important general formatting and control tools.

Canvas classes give windows the ability to contain multiple child controls (for example, static text, buttons, check boxes, and additional windows). The various positioning and sizing rules of these classes provide the means to build individual static, sizable, or scrollable areas within a window. Integrated tab, cursor key, and focus change handling implements the control infrastructure.

Finally, there are a number of complex classes that embody entire PM objects. These include font and file dialog boxes, a notebook, and a help window using OS/2's Information Presentation Facility (see Code Cache, May and August 1993, for details on IPF). A prime example demonstrating the capabilities of a complex class is the standard PM file dialog box (see Code Cache, July 1993, for an example implemented in C).

The openFile() function in listing 3 uses the IFileDialog class to open a file dialog box with the OS/2 desktop as the parent. We use desktopWindow() to float the file dialog on top of any other open windows, giving the function greater flexibility. The instance of the IFileDialog::Settings class (fdSettings) passes our default parameters to the file dialog constructor. Changing this function into a **Save as** file dialog is simply a matter of adding the statement **fdSettings.setSaveAsDialog()**. We then use the file dialog member functions fileName() and pressed OK() to retrieve the selection and check if **OK** was pressed. An IString class instance is used to store the file name, check it's size, and finally return the result from the function. As you can see, we accomplished quite a bit in just a few lines of code.

The UICL illustrates the power of object-oriented programming while drawing attention to one of its problems. The library greatly simplifies PM code, but its sheer size proves to be a formidable foe on the road to mastery.



## CODE CACHE

Nevertheless, the C++ advantage is evident. Note how our sample C++ hello world program is shorter and more readable than its C counterpart. This simplicity stems from a key concept of C++; the ability to "reuse" code written for us by expert class designers. We've only scratched the surface of the UICL—there is a lot more. Just about every PM element you can think of (and probably some you can't) have class definitions within the library.

It takes time to study and master object-oriented programming. The results, however, are worth it. You'll save time because you won't be testing code that is part of the class library. As a result, bugs can be isolated and found more rapidly than with C. However, in order to reuse the library you have to understand it well enough to know what is available. You can't reuse a class if you don't know it exists. While the initial slope of the learning curve may be steep, the climb will keep you coasting down a long hill once you've reached the top. ♦

*David Moskowitz is president of Productivity Solutions, of Norris-town, Pennsylvania, a consulting firm that specializes in OS/2 and object-oriented development.*

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## TIPS AND TECHNIQUES

BY GORDON SCOTT

# Having Your DOS and OS/2

**Y**ou've purchased a new engine for your old car. But after you install it, you find it has a few quirks—there's a knock as you accelerate, and more smoke than you'd like to see coming out the tailpipe as you ease off on the gas. At times you even think you'd like to have your old engine, bad as it was, back in your car temporarily. But if wishes were horses, then peasants would ride.

If you change the picture from cars to personal computers, though, it's not an idle wish. When it comes to upgrading your operating system, you can have your OS/2 and your DOS as well.

True, not all OS/2 users find themselves wishing they could jump back into DOS temporarily. But if you do, OS/2 provides you with some options for running true DOS without leaving OS/2 with its multitasking and crash protection.

First, though, let's set the record straight about OS/2's DOS emulation window. A few years ago, the first OS/2 guru I ever met explained to me that OS/2 doesn't run true DOS in that window; it merely emulates DOS. While the distinction has become subtle under OS/2 2.x, OS/2's DOS window is still not DOS. The guru's explanation was hard to top, and harder to forget.

"Gordon," he said, "the DOS window in OS/2 is not DOS. It looks like DOS, it talks like DOS, it smells like DOS, it even gets down on its belly and crawls like DOS, *but it ain't DOS!* It's just OS/2 acting like DOS."

While OS/2 does a fabulous acting job, there may be times when the mask slips. Those will be the times when you'll have to operate under native DOS, not DOS emulation.

Those who run DOS programs

under OS/2's DOS emulation and make a sacrifice here or there to do so may get a pleasant surprise using a true DOS session. Some DOS programs, even though they don't require a true DOS session, display noticeably improved performance running under non-emulated true DOS.

The following tips will show you how to start a non-emulated DOS session and provide more guidance about when to resort to such measures.

### Start DOS from a DOS disk.

#### How to do it:

- Place a DOS diskette (any version) in drive A.
- Open the Command Prompts folder (located in the OS/2 system folder).
- Double-click on the icon labeled **DOS from Drive A**.

**NOTE:** When the command prompt appears, enter the command **VER**. The window will display the version of DOS you are running. Compare this to the display you get when you type **VER** in a standard DOS window.

#### What this buys you: Quick access to "true" DOS.

When you complete these steps, you will notice that you have started DOS as a separate operating system in its own window. You can enter any DOS commands and the DOS operating system will execute them from the floppy disk in drive A.

There are some subtle but important differences between OS/2's emulated DOS session and running DOS proper. For example, emulated DOS sessions can't send messages directly to

the computer hardware. Suppose you had a DOS communications program that sent messages directly to the communications port. If you run that program in an emulated DOS session, the messages don't end up going directly to the COM port.

Instead, OS/2 creates a virtual communications port that regulates messages sent to the computer's physical communications port. In effect, OS/2 steps between the computer and the DOS program so that it can accomplish its preemptive multitasking more effectively.

As a result, some DOS programs have problems accessing hardware features. More often than not, these programs (such as PC Support for DOS, some CD-ROM drives, and some network applications running in a DOS session) require a special DOS driver in **CONFIG.SYS**. So if you are running a DOS program that needs direct access to your computer's hardware, you should try using a non-emulated DOS session.

Loading DOS from drive A may be fine for some situations, but in many cases where you need true DOS it's not very practical. That's why OS/2 gives you the option of using a DOS disk image. The next tip explains how.

### Run DOS from a DOS disk image

#### How to do it:

First, use these steps to create a DOS disk image:

- Place a DOS disk in drive A. This can be a from-the-box DOS disk, or a blank floppy formatted with **/S** and containing a copy of **COMMAND.COM**.



## TIPS AND TECHNIQUES

- Open an OS/2 window.
- At the command prompt enter: VMDISK  
A: C:\DOS\DOS61.IMG

NOTE: The path and file name of the target DOS image file can be any valid path name. You can also create multiple image files with differing versions of DOS to meet your specific needs (e.g., DOS33.IMG, or DOS50.IMG). For more information on creating an image file, type HELP VMDISK in an OS/2 window.

Next, use these steps to create a program object that uses this image file:

- Open the Command Prompts folder (located in the OS/2 system folder).
- Select the DOS Window object.
- Hold down the CTRL key while dragging the DOS Window object to the desktop with mouse button 2 (the right button on a right-handed mouse). This

creates a copy of the DOS window object.

- Open the settings of the new DOS window object.
- Select the **Session** tab.
- Select the **DOS Settings** push button.
- In the list of DOS Settings, locate and select the **DOS\_STARTUP\_DRIVE** entry.
- In the entry field provided, enter the path and filename of the image file. (Using the previous example, the entry would be C:\DOS\DOS61.IMG.)
- Select the **Save** button to save the new settings.

### What this buys you: Better performance when running real DOS under OS/2.

When you start DOS from an image file, OS/2 loads the file into memory. In other words, at this point you have a DOS disk that works from RAM.

As a result, performance is much improved.

Hardware access is not the only reason you may need a specific DOS version. Some programs require a true-DOS session because they look for special features found only in a specific version of DOS. There are a handful of programs that for one reason or another check the version of DOS through unorthodox means. When you run such a program, OS/2's DOS emulation window won't fit the characteristics they are searching for. Starting a specific DOS version under OS/2 accommodates these programs while giving you the benefits of OS/2.

There is one drawback to running DOS from a disk image: You can't access the OS/2 file system (i.e., you can't read or write to the hard disk). This would be a major problem, but

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## TIPS AND TECHNIQUES

once again, OS/2 provides a solution. The next tip explains how to use this feature.

**Use the File System FILTER command to give your specific DOS session access to OS/2 files.**

### How to do it:

- Edit the CONFIG.SYS file on your DOS floppy disk (or create CONFIG.SYS if it doesn't exist.) Add this line before all other DEVICE= statements:  
DEVICE=C:\OS2\MDOS\FSFILTER.SYS (your drive and path may vary).
- Save and exit the file.
- Create a DOS image file using the steps in the previous tip.

**What this buys you: Access to all**

### files (FAT or HPFS) from the DOS session.

Once you have started a specific version of DOS with this line in the CONFIG.SYS file, you can access your hard drive normally. That means you can then start DOS programs that are on your hard drive.

One limitation remains, however. If you try to read a floppy disk in drive A, you will find that the DOS session thinks of the image file as Drive A. This effectively blocks you from using the floppy drive from your DOS session.

However, there may be times you need to access the floppy disk after you have a specific DOS version up and running. Once again OS/2 2.1 provides a way, but it involves a minor change to the AUTOEXEC.BAT file. The next tip explains what change to make.

**Use the File System ACCESS command to use drive A after starting DOS from an image file.**

### How to do it:

First, specify that your DOS image will look for the COMMAND.COM file on the hard drive using the following steps.

- Edit the AUTOEXEC.BAT file on your DOS floppy disk (or create one if necessary.) Add the line SET COMSPEC=C:\DOS\COMMAND.COM to the file.
- Save and exit the file.
- Create a DOS image file as described previously.

Next, start up DOS from the newly created image file, and follow these steps to access drive A:

- Change drives to the boot drive (e.g., C:)

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## TIPS AND TECHNIQUES

- Enter the command `CD \OS2\MDOS`
- Enter the command `FSACCESS A:`

### What this buys you: access to the A disk drive from your DOS session.

Using these steps you have a complete DOS session available running under OS/2. With the exception of a slight pause after some commands or key-strokes, you won't notice any difference between this DOS session and a standard DOS window.

**Conserve disk space and memory by creating your DOS image from a 720K or 360K diskette.**

#### How to do it:

- Format a double-density diskette (if you have only high-density floppy drives, you have to specify the number of tracks and sectors as parameters to the

FORMAT command, e.g., `FORMAT A:/T:80/N:9/S`).

- Copy all files to be included in your DOS image file onto the double-density floppy disk.
- Create a DOS image file as discussed previously.

### What this buys you: a smaller image file, which means more efficient use of memory and disk space.

When you create a DOS image file, it makes a copy of the entire diskette, whether there is anything on the diskette or not. That means that when a 1.44MB 3.5-inch floppy disk is used to create an image file, you end up with an image file that is 1,474K in size.

When the DOS window starts up from this image file, it gets loaded into memory. That won't make any difference to your system's performance if you have

16MB of RAM or more, but if you are running with 8MB, it might crowd things a little.

By using a smaller-size diskette, you can reduce the size of the image file and conserve not only memory but space on your hard drive. ♦

*Gordon Scott writes on-line help and tutorials for OS/2 applications at IBM's Santa Teresa Laboratory in San Jose, California. Share your tips with OS/2 Professional readers by sending them through the Internet to [GSCOTT@STLVM22.VNET.IBM.COM](mailto:GSCOTT@STLVM22.VNET.IBM.COM). Gordon Scott can also be reached during normal business hours at (408) 463-4483.*

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## DATA DATES

*Seminars, Conventions, Expositions, and Conferences for the OS/2 Professional*

### November 16

Dallas, TX

### November 30

Atlanta, GA

#### THE ERGONOMICS CONSORTIUM SEMINAR ON WORKPLACE ISSUES

The Ergonomics Consortium, a network of independent consultants, offers a one-day workshop on the "physical and psychosocial factors affecting employees in today's computerized offices." The session, presented by board-certified ergonomist Carla Springer, is designed to help organizations establish health and safety programs that minimize the risk of employee injury and optimize comfort and productivity. The morning session offers an examination of problems within the office, as well as legislative developments on the topic. The afternoon is devoted to evaluating specific work environments. Total cost for the workshop is \$395.

Contact: The Ergonomics Consortium, (800) 568-2211.

### November 22-25

#### 1993 CANADIAN COMPUTER SHOW & CONFERENCE

Toronto, Canada

More than 300 vendors will show the latest in palmtops, pen-based and wireless technology, multimedia, and OS/2 at this year's Canadian Computer Show. Two new programs are being intro-

duced this year: the "Visual Communications Area," displaying audio-visual technology, and the "VAR Club," which offers discussion from members of this distribution channel on "various programs and expertise they have to offer dealers and resellers."

The conference portion of the show, entitled "The Fall Computing Classic," offers 16 sessions divided into four categories: nomadic computing, business re-engineering, enterprise networking, and emerging technologies. The Conference will offer a number of Canadian speakers, including Fred Gibbons, chairman and CEO of Software Publishing Corporation, and Frank Clegg, general manager of Microsoft Canada. Admission to all 16 sessions costs \$375.

Contact: Deborah Dugan, (416) 252-7791.

### December 2-3

#### INSTALLING AND MANAGING YOUR LAN TOOLS AND TECHNOLOGY

Dallas, TX

The seminar, designed for IS executives and end users with IS responsibilities, focuses on the tools and technologies needed for LAN and WAN implementation decisions. Presenting the seminar is Cheryl Currid, president of Currid and Company, an IT consultancy. The cost of the seminar is \$895.

Contact: DCI, (508) 470-3880.

### December 6-10

#### OBJECT-ORIENTED ANALYSIS & DESIGN

Boston, MA

This workshop is designed to "immerse the attendee in practical applications and exercises so that Object-Oriented methods can be put to use on a real project immediately upon returning to the office." It is a new five-day hands-on session led by Edward Yourdon, a 30-year veteran of the software engineering field. The workshop emphasizes group interaction and direct application of learned skills by citing two case studies throughout the sessions. Cost of the five-day session is \$1,895.

Contact: DCI, (508) 470-3880.

### December 8-10

#### DATABASE WORLD & CLIENT/SERVER WORLD

Chicago, IL

This year Digital Consulting Inc. has combined two of its shows, Database World and Client/Server World. The combined event offers a total of 10 sessions. Database topics include Database Technology, Object-Oriented Technology, Application Development, and PC Databases & Xbase. The client/server sessions will cover Executive Client/Server,

Client/Server Applications, Client/Server Databases and Tools, Network Management, Enterprise Database Connectivity, and Communications Technologies for the '90s. In addition, two one-day pre-show conferences will be offered, on Downsizing/Re-Engineering Applications with Client/Server Computing and The Relational Model. You can also choose from among six half-day management/technical sessions on Tuesday, Dec. 7th. Of course, Database World and Client/Server World also include an Exposition where you can view live product demonstrations along with the expected 20,000 other computer professionals. Price is \$995 for three days (includes your choice of conferences).

Contact: DCI, (508) 470-3880.

### December 13

#### UNDERSTANDING AND EXPLOITING GROUPWARE

Boston, MA

This half-day seminar is designed for business and IS executives, project managers, and system analysts involved in planning corporate technology strategy and evaluating groupware applications. This \$495 session offers an overview of groupware and where it can take you. (Also offered in combination with the Successful Notes Deployment Strategies seminar, below.)

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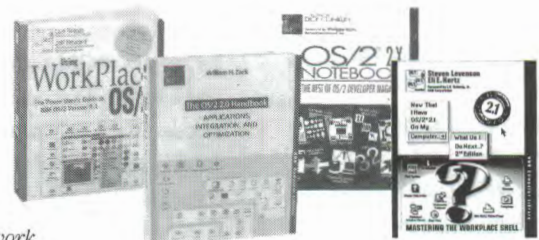
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## OS/2 For Dummies

by Andy Rathbone, IDG Books, \$19.95

## Voodoo OS/2 : Tips & Tricks with an Attitude

by Allen G. Taylor, Ventana Press, \$24.95

REVIEWED BY HUGH KENNER

**W**ith Fermat's Last Theorem apparently out of the way, the mental might of the West may now want to concentrate on disproving Kenner's First Theorem: A Wholly Intuitive Human/Computer Interface has Yet to be Devised.

A disproof admittedly would have to work around formidable obstacles, not the least of which is the vast popularity of the "For Dummies" series: *DOS for Dummies*, *Windows for Dummies*, altogether a dozen-odd titles, even *WordPerfect for Dummies*. The publisher claims some 3.5 million copies in print.

Now imagine the meeting at which the series title was settled on. It's a maxim of merchandising that you don't insult your customer. But out there, seemingly, there exist customers so desperate they'll even smile at the D-word if that's their sole way to learn how to get some work done. (True, the cover does offer a face-saver in smaller print: "A Reference for the Rest of Us!" That's a Registered Trade Mark, by the way; so is "For Dummies.")

Has there ever before existed a widely used technology that routinely reduced educated people to dummydom? Imagine *Cuisinart for Dummies* or *Xerox for Dummies*. No, the sole plausible candidate is *VCRs for Dummies*, and what frustrates in the VCR's domain is programming it, a task that's, come to think of it, right next door to computing.

Yes, yes, we all know how it all came about. In the era of eight-bit instructions, 64K and CP/M, software was sharply limited by

hardware, and operating systems weren't formidable. Despite notoriously wretched docs, CP/M was pretty easy to learn because micro hardware confined it to doing so little. A general with an army of ten privates can get by with a pretty simple command set.

Then came the 16-bit machine, and the need for what became DOS. But DOS was merely expanded from CP/M as though

the 8088 chip marked the edge of the

universe. Later, the

resources of improved

CPUs were served with

kludge upon kludge; so

*DOS for Dummies* was needed. Then Microsoft started

piling Windows atop DOS,

and by the time Windows 3.1

arrived, some 20 books from every tech publisher in sight were ready to arrive

alongside it, all meant to help users

understand a system that'd been meant

to free them from printed guidance. Such

a book is *Windows for Dummies*.

OS/2, granted, is far more transparent

than Windows. Unfortunately, history stuck it

with the need to run all that DOS and Windows software. That

means high-tech decisions (Solo? Dual Boot? Boot Manager?)

even before the Install. This time it's ten minutes after opening

the box that the buyer feels moved back to the Dummy square.

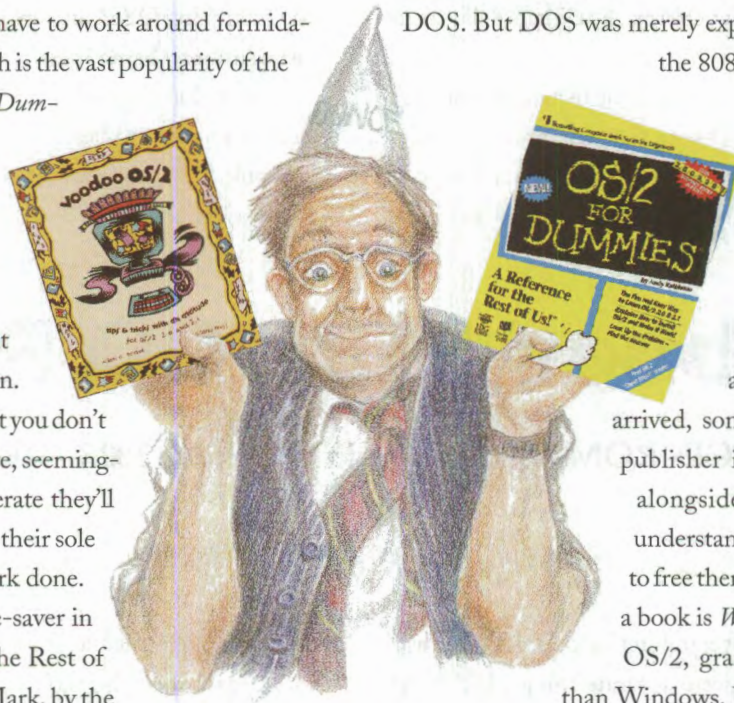
So, *OS/2 for Dummies*.

All of which is by way of claiming that the OS/2 manual is

about as good as it could have been, considering the levels of read-

ership it had to take account of: Coming in fresh? From DOS?

From Windows? From high-tech? From no-tech?





Such questions help outline the "For Dummies" niche: It's where tech words get explained, priorities arranged, and (most important) topics get put on display in such a manner that we can quickly decide what we do not, just at present, need to know. Windows loosens up wonderfully once we understand that no one, save maybe a programmer or a tech writer, need master all of it. It's less evident that the same is true of OS/2, but it is.

What Andy Rathbone has done in *OS/2 for Dummies* is comparable to guiding a motorist from Des Moines into New York City, then making the innards of NYC manageable while the visitor decides about settling there. By page 25, while still answering elementary questions like "What's Memory?," Andy neatly intercepts an Install query from someone whose computer gains speed by a maneuver called *ROM to RAM Remapping*, also *BIOS Caching* or *Fast Video BIOS*. For if you've only 4MB of memory, most of which OS/2 covets for itself, you'll get a freeze during Install. (Andy has a quick fix. A better fix, he adds, is to buy some more RAM.)

Chapter 2 (17 pages) gets you through the Install process, deftly circumnavigating EGKM (Every Glitch Known to Man). Chapter 4 (13 pages) is "a lightning-fast guide" to the first icons we'll see. We're warned, for instance, that the Shredder, unlike

the Mac trash can, is Dangerous (it really shreds). But we're also told about an UnShredder, installed by IBM and then for some reason disabled, and how over in Chapter 6 we can learn how to re-enable it; thereafter, Shredder loses its terrors.

About the *Voodoo* book. It's a shorter and looser attempt to "help you take control of the most powerful and solidly reliable operating system," etc., etc. The books in the *Voodoo* series "give quick answers to frequent questions that are not well-documented elsewhere." Thus you "accomplish more in less time and with less hassle." *Voodoo OS/2* also places what it calls "Installation Magic" near the end. It's assuming, that is, something Dummies does not: that you've the savvy to get OS/2 up and running on your own. In short, a fine-tune book.

That's exactly its emphasis; just be clear about what you're buying. Thus, pages 179-183 show you how to tack a decent icon to a program you're otherwise happy with. That assumes, note, that you're running OS/2, and are happy with an OS/2 program, and just yearn for a better interface.

In that domain, Allen G. Taylor's expositions are crisp and clear. If you want to clean up an established OS/2 installation, get his book. If you want to install one and make sense of it, pretend you're a Dummy.

## Hobbes OS/2 CD ROM

Walnut Creek CD-ROM, Walnut Creek, CA 94596-2228, (800) 786-9907, \$24.95

REVIEWED BY JOHN HEILBORN

**W**e often talk about computer hardware and software as though they were separate things, but in fact they are not. Hardware—the stuff that we call computers—is totally dependent on software. A computer without a program is nothing more than an expensive table decoration. It can do nothing.

It's little wonder then that most computer users, whether in the home or the corporate office, are on a more-or-less constant search for better software. The trouble is, it often seems that the best software is also the most expensive.

One exception to this rule, however, is shareware, which

works on the principle of "try *before* you buy." It is distributed for free, allowing the end user to try it out before paying for it. And the final cost is generally lower than for commercially distributed products—typically in the range of \$10-\$35 per program.

Because of the low cost of shareware, it is often looked upon as being low-quality. In fact, though, this is usually not the case. Most shareware is developed by expert computer programmers who write software because they love to do it, and write the utilities because they need them. Although there certainly are shoddy shareware programs, most are at least



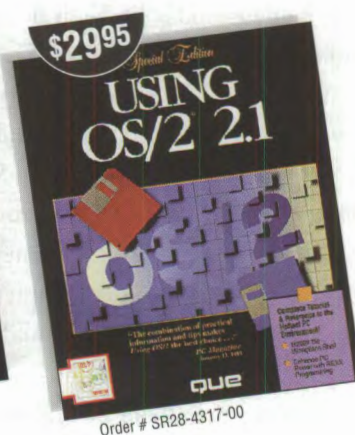
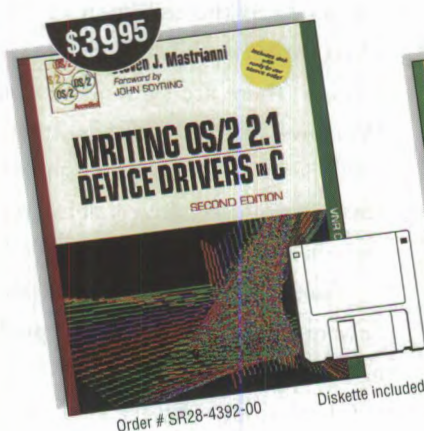
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## BOOKSTAX

as good as their much more expensive retail counterparts. Hobbes OS/2 CD-ROM is a case in point.

This CD-ROM contains literally thousands of programs for OS/2, ranging from games to high-level system utilities downloaded from the world's largest computer network, the Internet. It has libraries of device drivers and both PostScript- and TrueType-format fonts, all in compressed form.

Originally designed to be used by BBSs (computer bulletin board systems), the Hobbes OS/2 CD-ROM includes a number of utilities that make it easy to install on a host system. It can, however, be used just as easily on a single-user system or a network. The programs on the CD-ROM are organized into sections, and both the sections and the programs are accessible through a utility on the CD-ROM called "VIEW."

VIEW displays the program names and descriptions on-screen in a list format. All you need to do to use a given program is to highlight the program with VIEW's cursor and press the **Enter** key. This initiates a process that decompresses the program and all of its subordinate files (if any) and then copies them to a directory on your target hard drive. From there you can run the program as you would any standard application.

Because of the enormous number of programs on this disk, listing them here would be impossible. What we can do, however, is to take a look at a sampling of what this disk has to offer.

There are, for example, nearly a hundred fonts. Some are general-purpose business fonts like Crillee, a sans serif, blocky, italic font, and GraphicLight, a delicate, serif type. Others have more specific purposes, like Cartwright, a font that looks like it was lifted right out of the old West, and PostCrypt, which would find a good home on the front of a Halloween invitation. The selection is huge, and some of the names of the fonts are a bit vague, so I'd suggest downloading several at a time and viewing them using an application.

Another category of files included on the Hobbes CD-ROM is disk utilities. This is a collection of 27 programs designed to help manage your data. One program, BACK2FAT, allows you to backup an OS/2 HPFS drive or drive partition to a standard DOS or OS/2 File Allocation Table (FAT)-type drive or partition. This lets you make better use of your hard drive space if you have a lot of files allocated to HPFS and room on a FAT partition—a common occurrence.

Probably the most useful group of files in this section are the three McAfee programs: OCLN102, ONET102, and OSCN102. These are anti-virus programs from the McAfee Group. OSCN102 is a virus scanning program that identifies and isolates virus programs and ONET102 is essentially the same program for networked computers. OCLN102 is the McAfee virus cleaning utility, which typically is able to remove the virus while leaving the program files unaffected.

Beyond the strictly business applications on this CD-ROM, the Hobbes collection includes printer drivers, display drivers for high-resolution monitors, games, and much more. Interestingly, one of the categories that seemed initially to be mostly frivolous was the collection of Presentation Manager icons. There are thousands of icons here, drawn from a number of sources (there are symbols reminiscent of the Macintosh, Windows, and NeXT GUIs), that can be used to make your OS/2 desktop more personal and easier to navigate. Additionally, most of them are editable, and the CD-ROM includes a built-in icon editor.

Whether you are using your system to manage a business or want to simply become more productive, this is a CD-ROM to try.

Oh, and by the way, it also includes a program that is an essential for any serious computer user—ADVENTURE. True, it's just a computer game, but it's not just *any* computer game; it is the first real game that was developed for computers. Its roots go back to the original mainframe systems, predating microcomputers by nearly a decade. ♦

---

*John Heilborn has covered the industry for 32 years. He is the author of 55 books on computers and thousands of articles. Heilborn is probably best known for his syndicated computer column, "Ask Dr. John."*



## INPUT

*continued from page 67*

People to whom OS/2 is recommended should satisfy these characteristics:

1. Whatever they are currently running should be supported by drivers shipped with OS/2 or which you, the recommended, personally posses, and can provide. In particular, individuals stuck with an S3-based board should move to OS/2 only if they aren't using it (for anything above 640x480x16 colors) anyway.

2. A certain comfort level with technology is needed. This is because the only safe OS/2 installation has a primary hard disk with these partitions (the order may vary):

- a. Boot Manager (primary)
  - b. A real DOS (MS-DOS, PC-DOS, DR-DOS) (primary)
  - c. OS2Seed (primary)
  - d. OS/2 itself (logical)
3. The primary goal should be to

multitask DOS programs. Tolerance for limitations on Windows programs and the inadequacies of OS/2 itself should also exist.

4. Anyone who is really "into Windows" should not be encouraged to run OS/2. In particular, anyone who would need or expect Windows multimedia to work or ATM to stay activated for more than a couple of weeks at a time should stick with Windows.

5. Prospective users who use Windows as a task-switcher and whose Windows programs will actually run under OS/2 (no 2.0 or really old 3.0 programs, no Extended Mode-only programs, no Win32s programs) should be satisfied and will appreciate seamless mode in those cases where it works.

6. The primary benefits of using OS/2 should be presented as:

- a. Crash protection (which finally works for DOS);
- b. Flexibility in organization (multi-

ple program objects for the same executable in different folders, sub folders, etc.).

7. Dual Boot and Work Areas (except the desktop itself, which cannot be changed from being a Work Area no matter how irritating that may be) should not be recommended.

8. If software availability is an issue, the vast DOS software market is the answer. Selected Windows programs (the ones that run in WIN-OS/2 Standard Mode) are part of this answer. Actual OS/2 programs, while not as unstable as WIN-OS/2 itself, are not as Crash Protected as DOS programs and should be avoided until OS/2 itself actually works properly. All recent system lockups and major systems failures have involved OS/2 and WIN-OS/2 Extended Mode programs. ♦

*Paul Person  
Seattle, WA*

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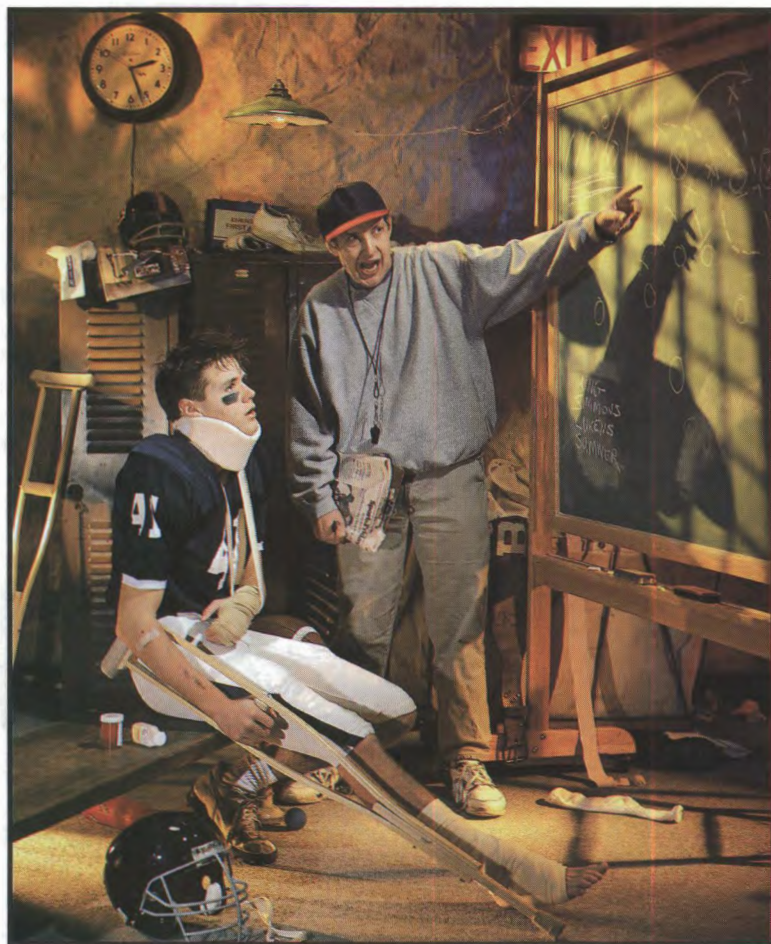
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## BIX

If you can hack it



# US/TOO

Gossip and Chip Talk

**THIS AIN'T NO POLKA.** When **Bruno Blenheim Inc.** hired "dancers" for the exhibitors party on the opening night of NetWorld/ Dallas, it wasn't expecting them to show up in stripper attire—or lack of it. But they did. The four women wore lace teddies, the men sported California-style thong bikinis. When the entertainers were told to change, the women returned in skimpy short shorts and bikini tops; the men had put on jeans and cowboy boots. Ultimately, show officials asked the dancers to leave. Red-faced Blenheim staffers apologized, claiming it was all a "big mistake."



**OS/2 WEEK TELLS ALL.** *OS/2 Week*, the new weekly intelligence bulletin, has already caused a stir and caught the attention of IBM. Many rumblings could be heard out of Boca Raton and Austin after the second issue of the weekly fax newsletter revealed IBM's plan for its new Windows-user raider, code-named *Ferengi*. Judging by the response, *OS/2 Week* nailed that story. Stay tuned for further developments.



**BACKMASTER BABY.** Is **Mike Kupka** going to get any sleep at all? Not only is the MSR developer staying up nights to put the finishing touches on Backmaster, his wife Juanita just gave birth to their second child. Congrats!

**CHANGES AT THE TOP.** **James Cannavino**, previously senior vice president and general manager of Personal Systems, has become an IBM senior vice president and group executive. With the "Personal Systems" corporate tag out of his job description, Cannavino now focuses on IBM's new global strategies and reports directly to CEO **Louis Gerstner**. With changes like that, one can only wonder how far-reaching the makeover at Big Blue will ultimately be.

**DO IT RIGHT THE FIRST TIME.** Remember the extra large room and lengthy, boring announcements at PC Expo in New York last June? And the embarrassingly slender number of attendees? By the time NetWorld/Dallas rolled around this year, IBM had learned at least *that* lesson. In Dallas, where

IBM announced the new LAN NetView family for managing distributed LAN environments, the press briefing room was the right size and a reception followed the brief conference. **Peter Hayes**, IBM's director of communications, was heard to tell one media representative, "We didn't want to make the same mistake as last time." Sounds right.

**FARM DRIVE.** Guess who just drove down from his farm? **Bill Rich**, the affable number-two man in PSP, has finally moved into new digs in Boca Raton. That meant leaving—at least temporarily—his quaint New Hampshire farm. Rather than jet down to Florida, Bill hopped in his car and drove. He doesn't believe in taking short cuts, so undoubtedly it was a nice long drive.

**NO TIME TO PARTY.** Watcom telereps couldn't attend their own company party honoring the success of VX-REXX, the hot new tool. Apparently, the phones are ringing off the hooks and the telereps decided to forego the victory celebration in lieu of more sales.



**PALM SPRINGS AWARDS.** The First Annual OS/2 Professional Interchange Awards were presented in mid-October. The last thing anyone at the gala poolside event expected was to see *OS/2 Professional* Editor-In-Chief Edwin Black arrive dressed in an Alladin outfit and sitting astride a camel. Nine awards were presented: **Ted Salamone** picked up the highest honor as the OS/2 Pro of the Year; **Dave Whittle** received the Team OS/2 prize; and The Readers' Choice Award went to **WordPerfect 5.2**. Full details will be provided in the December issue of *OS/2 Professional*.



**MINDING THE STORE.** Recently retired **Roland Peek** is back at work as an outside consultant for IBM. What's he doing? You guessed it: Roland's still running the convention OS/2 store, newly renamed the PSP Store.

**HEADED UP?** Some in IBM suggest PSP advertising manager **Joanne Meleski** is being groomed for rapid advancement. Evidence? Friends report she took time off last month to attend Management School in Armonk. ♦



LET THE CHIPS FALL

# OS/2 and the Future

**M**any people in the industry are wondering what happens now that IBM's PSP group and Microsoft will no longer be sharing OS/2, DOS, and Windows source code.

Let me set the record straight: The termination of the source code exchange allows us to continue our aggressive software strategy.

What did we get out of the source code exchange? The main benefit of exchanging source code with Microsoft was to have access to 16-bit Windows source code, enabling us to provide Windows application compatibility under OS/2. Having access to the Windows code was once important to ensure 16-bit Windows application compatibility, but the industry's focus is on the future and the powerful possibilities of 32-bit computing. With OS/2 we have the most robust, tested, and proven 32-bit PC operating system available today, and we are absolutely determined to keep this competitive edge.

What happens now? Our long-term strategy is to raise the level of the programming interface to the operating system. We intend to provide software developers—-independent or corporate—with new high-level, functionally superior object layers on top of these low-level APIs, and to make those object interfaces consistent across multiple platforms, e.g., OS/2, Unix, Windows, etc. Such a strategy should be far more productive for software developers as opposed to dealing with countless new low-level APIs.

Protecting our customer's investment in software has been a design goal for OS/2 from the start and OS/2 2.x has "raised the measurement bar" for operating systems. Now an exciting new era of 32-bit OS/2 applications is upon us. Independent software vendors have been telling us about the demand from their customers for 32-bit OS/2 applications.

Software vendors such as WordPerfect, Lotus, Computer Associates, and Symantec, for example, are shipping, or planning on shipping, OS/2 versions of their respective flagship applications. Last, but certainly not least, the number of applications appearing from small software companies is also a great indicator of things to come.

For example, by the time the PSP Technical Interchange, held in Orlando late in September, had come to a close, there were

announcements made by BocaSoft, Hockware, Compuware, Insync Software, Solution Technology, Media Cybernetics, and Development Technologies.

With more and more users experiencing the new levels of productivity that multitasking and multithreading bring, the future for OS/2 has never looked better.

What about future compatibility? As far as Windows, let me put to rest concerns regarding compatibility. We are confident in our ability to implement any Windows API should any of the four 32-bit APIs present a compelling business case to do so.

Now that there is a popular 32-bit Intel-based OS/2 API spurring on the delivery of more than 1,300 applications, perhaps customers should be asking another question: When will Microsoft provide support for these up-and-coming applications?

We have demonstrated our technical prowess by enabling 16-bit Windows applications to run and perform in a 32-bit environment, as we've done in OS/2. The industry now recognizes that Windows applications perform as well or better in an OS/2 environment than they do natively. Not bad for a group of IBM developers that were told they wouldn't even get Windows to run in OS/2; wouldn't you agree?

Frankly, our software developers have lived up to every challenge thrown at them the last couple of years. I'm sure most will recall that a lot of folks said there was absolutely no way we could get Windows running under OS/2; yet we did. Then they said we couldn't make it happen seamlessly on the OS/2 Workplace Shell desktop; and we did. Then we were told we couldn't get Windows 3.1 applications to work; we did that too. We've proven we have the skills and resources to make it happen. ♦

*Lois Dimpfel, Director  
Personal Operating Systems,  
IBM Personal  
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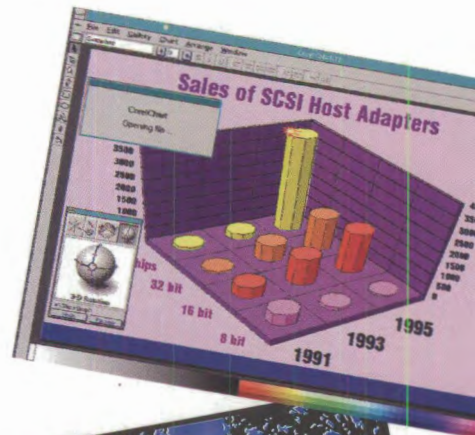
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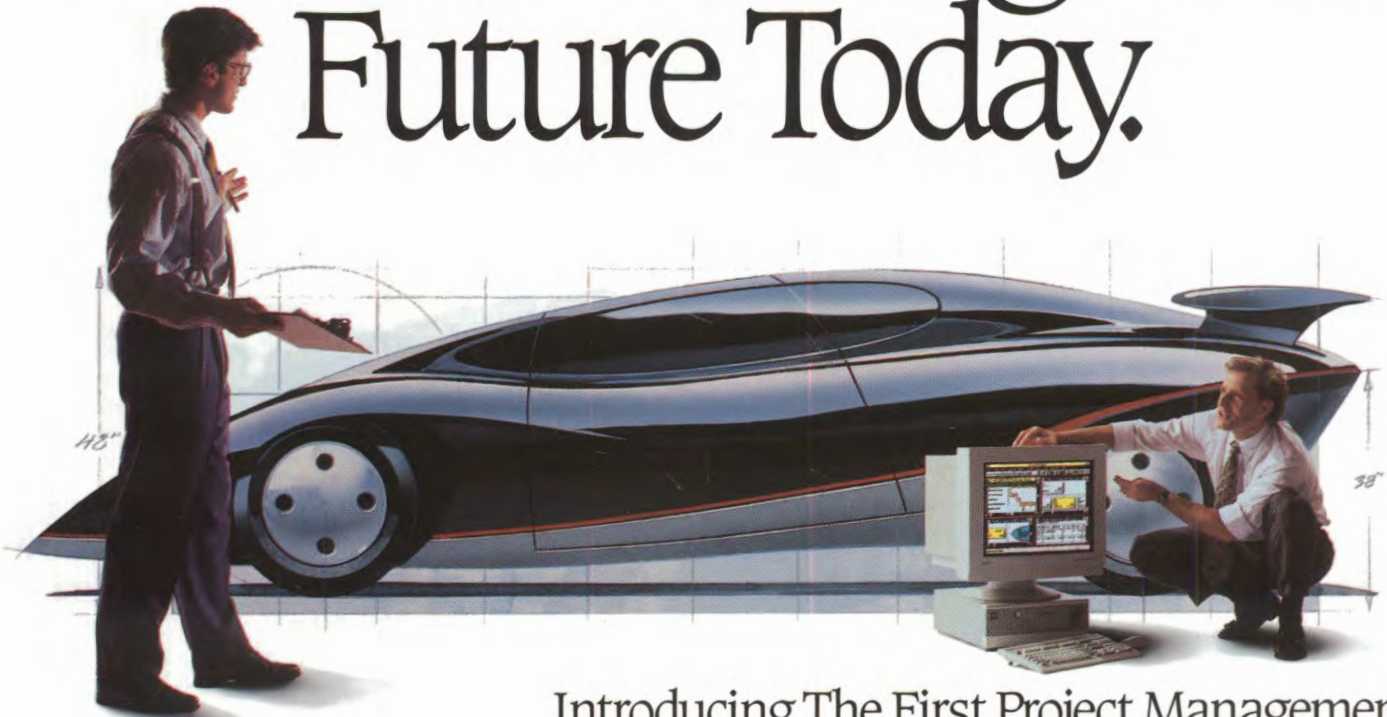
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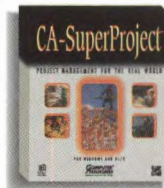
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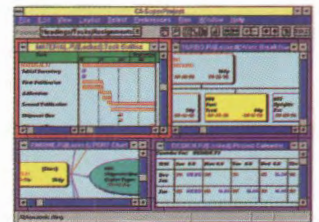


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